

Week

Price 35 cents

Profit-margin squeeze continues.
First-quarter sales are slightly
higher, but profits slide . . . p. 20

German trade fair in Cairo pushes
chemical sales by stressing
political acceptability' . . . p. 32

New ultraviolet absorbers give
plastics up to five years' protection
from the sun p. 40

Triple superphosphate's excess
capacity doesn't worry producers.
They see big demand ahead. p. 66

Investing in chemical stocks? It's
the 'patient money' that gets the
big payoff p. 80

GS E P POWER
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ALL PUBLICATIONS

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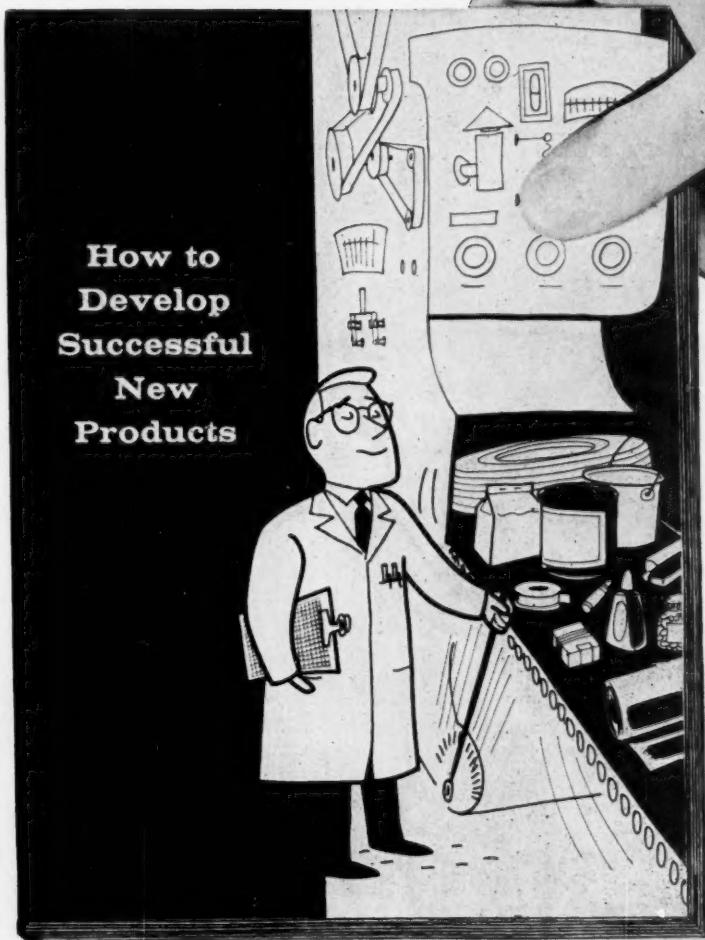
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INDUSTRIAL CHEMICALS DIVISION • BALTIMORE 3, MD.



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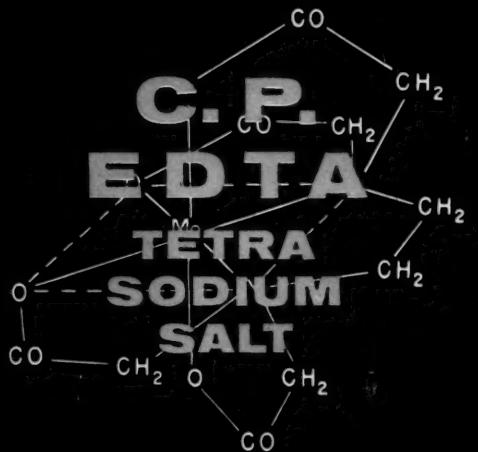
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TOP OF THE WEEK

May 4, 1957

- **Here's the word on Monsanto**—the problems in company operations, its expectations on 1957 earnings, and how it's fitting Lion Oil into its operations p. 22
- **Should a private company be allowed to condemn property** for acquisition? The North Carolina legislature is pondering a bill that would give companies that right—if pollution abatement is involved p. 22
- **How much has production of chemical commodities grown?** New government study pinpoints the trends p. 24
- **Mantrose automates an ancient process with new equipment** installation. Here's how it is upgrading shellac for new chemical specialty roles p. 48
- **Asphalt antistrip additive makers see \$40-million/year market,** but patent fights and oil company opposition are slowing the sales growth p. 54

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22 A four- to fivefold expansion of petrochemical production is planned by Shell Oil in Great Britain.

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34 Synthetic fibers, coatings and rockets highlight global trade fair held in New York.

38 Purchasing agents to study sales-purchasing relationship.

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Substituted benzophenones find use as ultraviolet absorbers.

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48 PRODUCTION

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60 Chicago specialty maker Paryzer starts booming business with \$7,000 capital.

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66 MARKETS

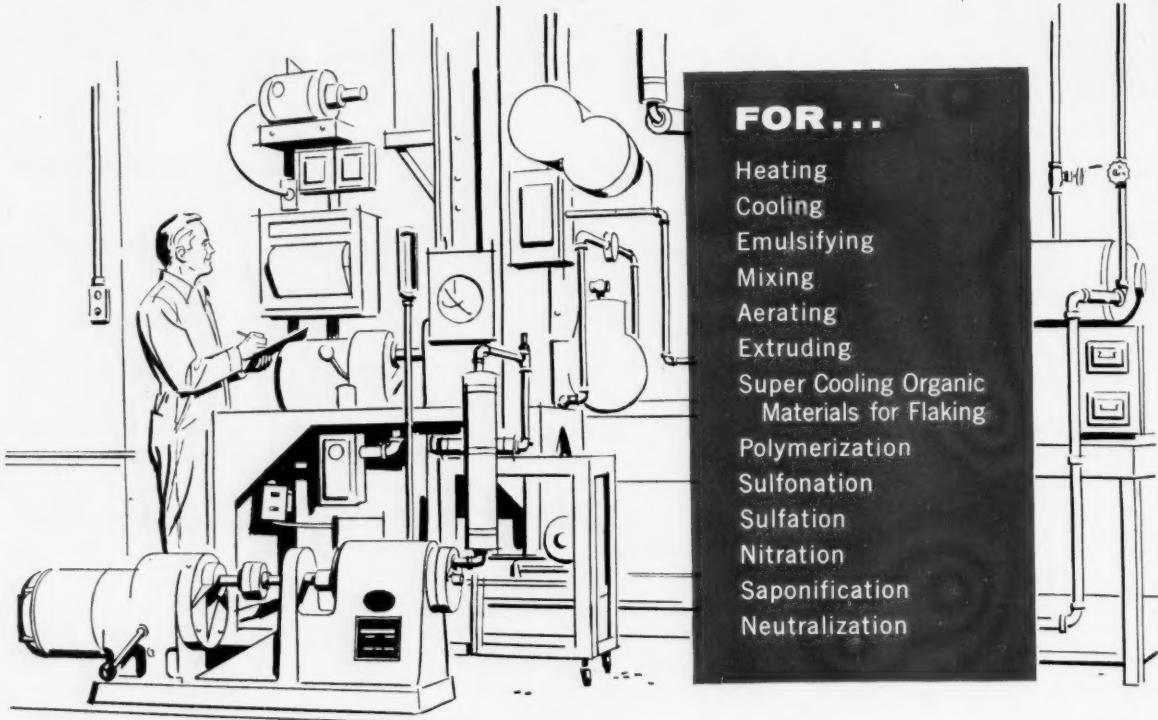
Triple superphosphate expansions have pushed U.S. capacity some 15% above present production—but producers aren't worried.

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Checkup shows chemical securities—over long haul—are living up to "growth stock" reputation.

86 Process companies take lead in city-industry partnership plan to combat stream pollution in Buffalo area.

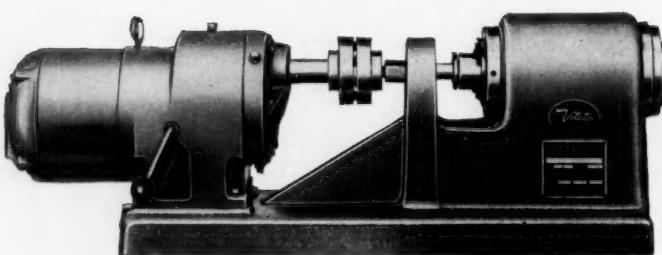


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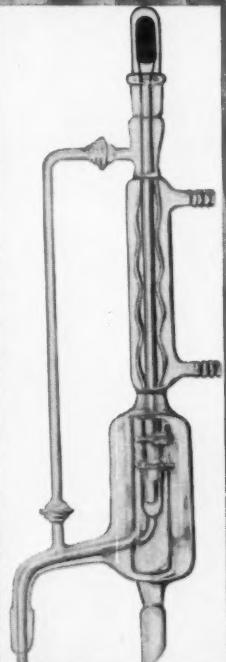
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How far should a chemical manufacturer go in helping distributors?

A manufacturer must go far enough to insure the sale of his own products.

This is only common sense.

The burden of establishing and advertising any product rests with the manufacturer. The burden of making the product available in the desired quantities, at the right time, to fit the needs or requirements of the buyer, rests with the distributor.

The manufacturer has to establish his brand name in the mind of the prospect or purchaser—create the desire to try it or buy it.

The distributor identifies himself as a local outlet for that brand—the one who serves the customer at the local level.

Simple, isn't it? Yet, it's funny how much confusion there is and how complicated the process can get.

One of the reasons distributing Wyandotte products works out to the advantage of both our distributors and ourselves, is that the Wyandotte distributor policy is clear-cut and written down.

Wyandotte distributors know that we assume the burden of the market establishment, advertising, research, and product development . . . that we do a consistently good job of it.

We know that Wyandotte distributors fit our products to the needs or desires of buyers at the local level (primarily in less-than-carload lots), and that we grow as they grow.

Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION

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Life on the Chemical Newsfront



OUTDOOR USE OF EMULSION PAINTS GROWS as formulators improve weathering characteristics. For example, polyvinyl acetate emulsions, already popular indoors for easy application, quick dry and freedom from odor, are made more resistant to checking, cracking, chalking and peeling by use of suitable plasticizers. Esters such as dibutyl maleate, derived from maleic anhydride, make effective nonmigrating internal plasticizers which can't be leached out by rainwater. **AERO*** Maleic Anhydride is one of many chemicals supplied by Cyanamid to the surface coatings industry. (Industrial Chemicals Division, Dept. D)

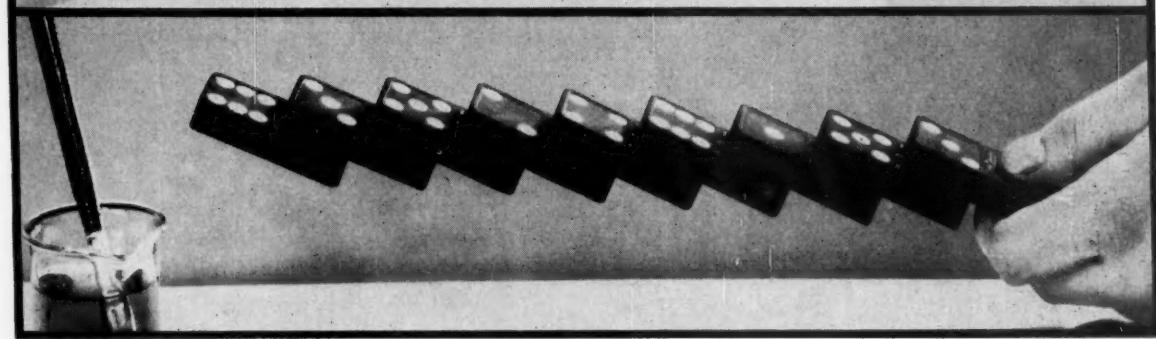
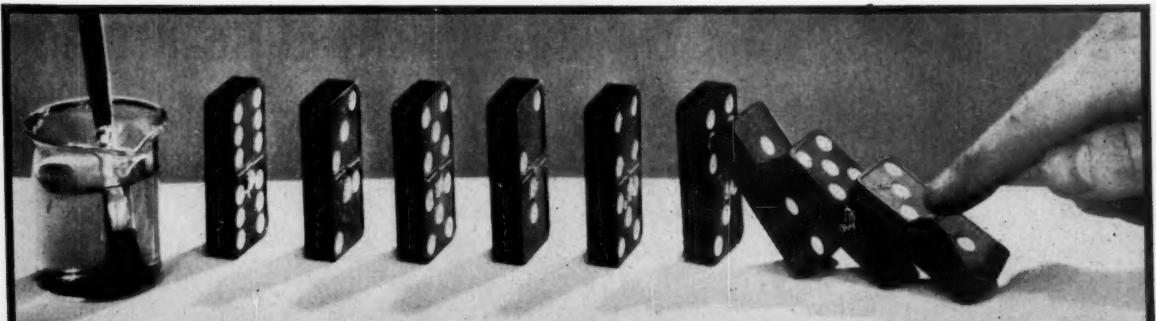


NEW WAY TO TREAT minor skin cuts and abrasions is by a topical spray of **ACHROMYCIN®** tetracycline for protection against infection. Sprayed directly on the affected area from this aerosol applicator, the preparation permeates the skin rapidly and dries almost instantly, reducing the possibility of soiled or stained clothing. Nothing touches the treated area but this broad-spectrum antibiotic preparation.

(Lederle Laboratories Division)

BOOM IN FOIL FOR DISPLAY PACKAGING followed its shift from purely protective to decorative use with the development of successful color printing methods. Among important new pigments for foil lacquers, can coatings and metal decorating is Cyanamid's Benzidine Yellow Toner T 45-2460. It provides the greenness of tint, high transparency and light permanency essential for such applications. It has the strength and clarity, alkali and soap resistance, and excellent lithographic properties for which Benzidine Yellows are noted.

(Pigments Division)



HIGHER INITIAL TACK or "stickiness" in adhesives can be secured with PAM® polyacrylamide, a new water-soluble polymer. Its excellent spreadability and compatibility with water-soluble resins and modified cellulose also recommend it as a component to improve liquid, film or bond properties.

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(New Product Development, Dept. D)



CARPETS AND RUGS STAND UP BETTER when treated with Cyanamid's Aluminum Acetate 20% Sulfate Free. A coating of aluminum salts on broadloom and tufted carpets and rugs establishes a foundation for rubber or synthetic latex backing and improves adhesion, reduces migration. Aluminum oxide residues remaining after drying contribute high resistance to water-spotting and staining, particularly on cellulosic fibers. After-treatment with aluminum acetate increases the fastness of many classes of dyes. Combined with certain CYANATEX® Soluble Waxes, it imparts water-repellency to many types of fabrics. (Organic Chemicals Div.)



STRONGER PARTICLE BOARD, made of wood chips bonded with MELURAC® 304 Melamine-Urea Resin, is growing in favor for structural applications. This low-cost particle board has good warp resistance, flexural strength, moisture resistance and easy working and finishing properties. MELURAC 304, developed expressly for this use, imparts no color and improves strength of the panels. In addition to structural uses—walls, sliding doors, partitions, ceilings, subflooring, parquet flooring—it is ideal for furniture cores and underlayment for decorative melamine laminates.

(Plastics and Resins Division)

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May 4, 1957 • Chemical Week

"Automatic" FOAM-WATER SPRINKLERS provide DOUBLE FIRE PROTECTION for Chemical Plants



**A THICK BLANKET OF FOAM TO SMOOTHER SPILL FIRES OF FLAMMABLE LIQUIDS
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"Automatic" Sprinkler now combines AIRFOAM with WATER in a single system in which the same nozzles or sprinkler heads first discharge a large volume of thick foam that quickly extinguishes spill fires, then spray a deluge of water over the entire area to prevent fires above floor level from spread-

ing or causing damage to structure or equipment.

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Existing sprinkler systems may be modified to use FOAM-WATER sprinklers without involving re-design of piping.

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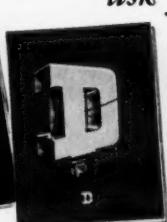
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flattening agent.



Syloid® 244 . . . superior
flattening agent in clear
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OPINION

Over 20 Launderings

TO THE EDITOR: Your article titled "Newest Target: Clothes" (March 23), on bacteristatic finishes for textiles, might leave the impression that Scientific Oil Compounding Co.'s treatment is less durable than the other two treatments mentioned.

To set the record straight, SOCCI #6618, our combination bacteristatic fungistat for textiles, has repeatedly remained effective after more than 20 launderings in various combinations of soaps, detergents and bleaches.

RALPH EISENSCHIML

Vice-President
Scientific Oil Compounding Co., Inc.
Chicago

Bombs Away!

TO THE EDITOR: We think your article (April 6) on G. Barr is excellent. However, we note on p. 132 the closing line of this article reads, "on the big boom in bombs."

We in the aerosol industry are trying to move away from the words "boom in bombs" because of its negative consumer reaction. We stress safety, convenience, etc., and hope that this image will eventually replace the "bomb" connotation.

R. D. DRAKE

Advertising & Sales Promotion
Manager
Crown Cork & Seal Co., Inc.
Philadelphia

A good point. Aerosols got their start as "bug bombs," of course, and the name has stuck.—ED.

Cholesterol Research

TO THE EDITOR: . . . [Re] your article "Fats: Heart of the Coronary Problem?" (March 23). . . .

No. 1 under "Answers to These Questions on Edible Fats and Oils" states: "How high a proportion of linoleic acid to saturated fatty acids can a normal person consume without causing a rise in his blood-cholesterol level?" I believe that statement is in reverse. It should read "How high a proportion of saturated fatty acids to linoleic acid can a normal person consume without causing a rise in his blood-cholesterol level?"

On p. 60, under "What Edible-Fats Makers Say," you list National Dairy

Council under shortening makers and state that "National Dairy Council says it is supporting research on butter, regularly summarizes and reports results to its members."

Actually, we are not "shortening makers," and our research is not as narrow as your statement implies. National Dairy Council is supporting epidemiological and controlled dietary studies with human subjects to determine the influence of different dietary fats and other factors of diet on serum cholesterol levels and the incidence of coronary heart disease; the metabolism of essential fatty acids in animal tissues and their relationship to other nutrients such as pyridoxine and cholesterol; the effect of moderate- and low-fat diets on serum cholesterol levels and chronic illnesses during weight reduction of obese middle-aged men and women; and the fate of various lipid materials when ingested by human subjects, normal and otherwise, by following tagged molecules.

While we report regularly to our members, we report more regularly to the medical profession and to researchers working in this field. We held a research conference on the subject at the federation meetings in 1956 and are planning one in connection with these meetings in 1957. . . .

ZOE E. ANDERSON
Director of Nutrition Research
National Dairy Council
Chicago

TO THE EDITOR: . . . Re Research (March 23, p. 58) . . . a very fine article on cholesterol, except that it leaves out the fact that there are three types of cholesterol in the blood stream and thus in the capillaries, veins and

arteries: alpha, the essential portion; beta, the portion that appears to control the production . . . of alpha; and gamma-cholesterol, the soft but brittle "fat" that deposits on the "walls."

The latter is contained in most, but not all, animal fats (pork, duck, goose, salmon, trout, all shell fish—in the latter the only fat present) and in cocoa (chocolate), coconut-oil, avocado. The beta type is present in corn oil, peanuts, olives, all "unsaturated" liquid oils, egg yolk. Practically no research has been done in the U.S. in recognizing these three types of cholesterol. Hence, a blood cholesterol test is of little value.

LAZARUS FALLER
West Hollywood, Calif.

Exports Up, Price Down

TO THE EDITOR: Your article, "Vitamin Makers Split on Prices" (Feb. 9) was interesting. However, the mentioning of prices quoted previous to 1950 would have shown more clearly the steady downward trend for all vitamins at a time when no imports affected price levels (see table, below).

The vitamins B₂, B₁₂, E and K have never been imported, but their prices have nevertheless been going down, in some instances more drastically than those quoted for vitamins B₁ and C.

We assume that the figure of 42,000 lbs. for 1956 imports of vitamin B₁ had been estimated. Up to the date of publication of the original article, 1956 import figures had been released for only the first 11 months and U.S. production figures for the first nine months of 1956. Now, 1956 import figures for vitamin B₁ and export and production figures for the

Range of Prices of Vitamins

(per Kilogram)

	B ₁	B ₂	B ₁₂	C	D ₂	
1940	\$980	\$1,500			\$70	
1942	370	650			35	
1944	220	310		\$1,300	28	\$4,400
1946	160	200		1,300	25	2,900
1947	160	150		650-800	25	2,500
1948	160	125		550	25	2,100
1950	160	125		550	25	1,900
1952	135	125		550	21	1,000

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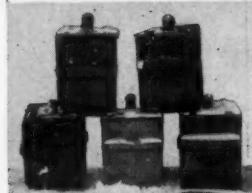
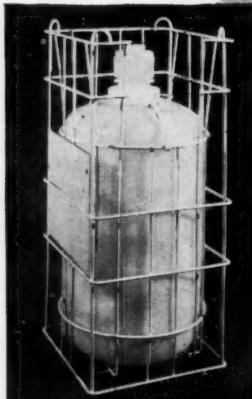
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T. M. REG. U. S. PAT. OFF.
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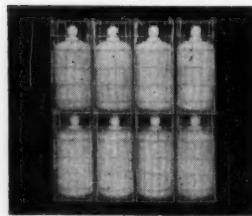
Carrier

I.C.C. APPROVED I-H

LIGHT TARE WEIGHT
Saves Storage Space
BREAK-PROOF
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Easy Handling



The old way with numerous problems.



The new "STEEL-X" Carrier that eliminates your old problems. 5-6½ and 13 gal. sizes.

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Containers and chemicals for Industry
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ALL WIRE CARRIERS ARE NOT "STEEL-X" CARRIERS . . . THERE'S A DIFFERENCE

OPINION

first 11 months of '56 are as follows:

Domestic production: 218,000 lbs. (17% over same period 1955).

U.S. exports: 49,000 lbs. (19.5% over same period 1955 and 22.5% of domestic production).

U.S. imports: 38,328 lbs. (17.6% of domestic production).

The American manufacturers, therefore, were able to increase not only production but also exports, and to such an extent that the U.S. exported nearly 28% more vitamin B₁ than was imported.

LUDWIG I. FLORSHEIM
Vice-President
Fallek Products Co., Inc.
New York

MEETINGS

European Federation of Chemical Engineering, symposium on chemical reaction engineering, Amsterdam, May 7-9.

Electrochemical Society, Inc., 111th meeting, Hotel Statler, Washington, May 12-16.

U.S. Atomic Energy Commission, inter-American symposium on the peaceful applications of nuclear energy, Brookhaven National Laboratory, Upton, L. I., May 13-17.

American Chemical Society and Chemical Institute of Canada Rubber Divisions, conference, Mount Royal Hotel, Montreal, May 15-17.

New York State Society of Professional Engineers, engineering industries exposition, Statler Hotel, New York, May 16-18.

Southern Research Institute, symposium on current developments in the rocket and missile field, Birmingham, May 16-17.

American Institute of Mining, Metallurgical and Petroleum Engineers, theme: Melting and Solidification, Hotel Statler, Boston, May 17-18.

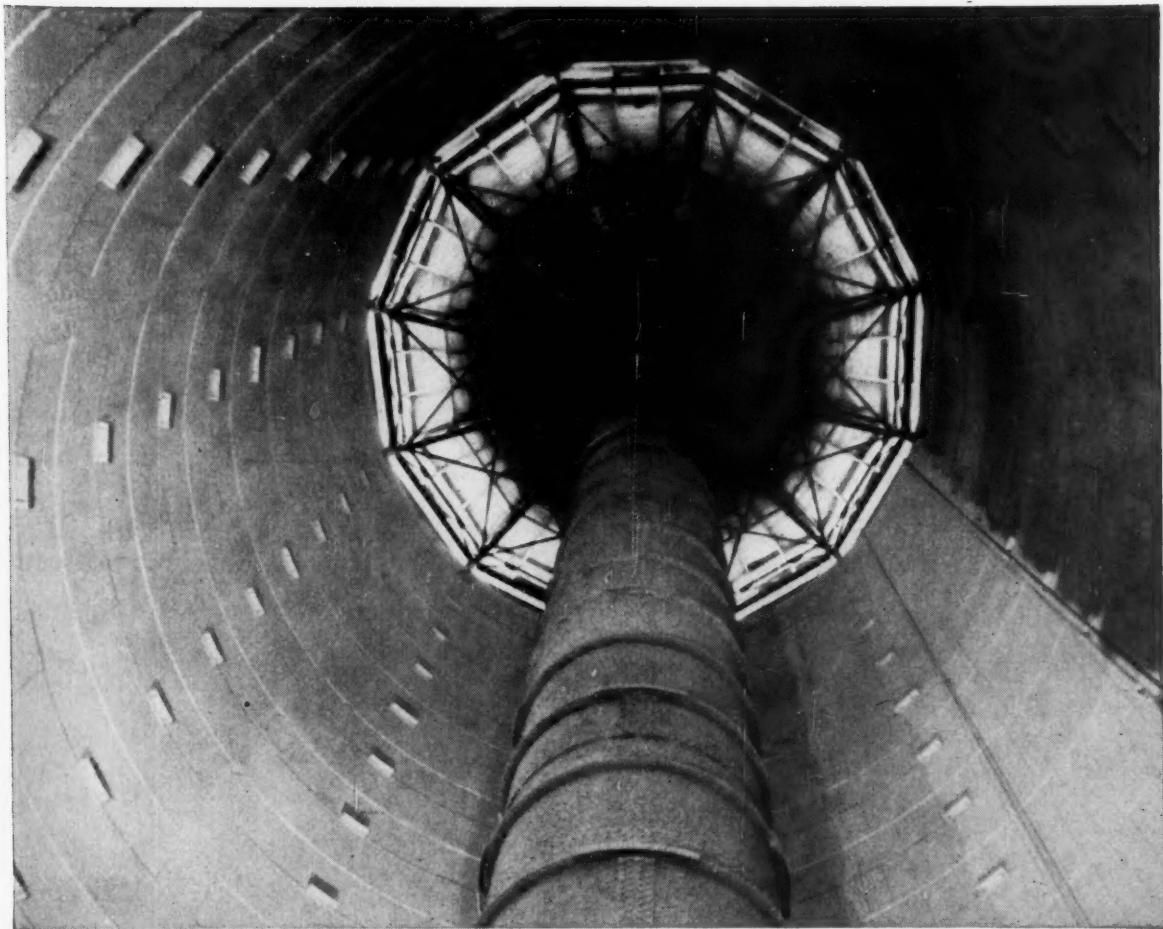
Technical Assn. of the Pulp and Paper Industry, coating conference, Milwaukee, May 20-23.

Armed Forces Chemical Assn., 12th annual meeting, theme: Setting the Sights for Industry; Sheraton-Park Hotel, Washington, May 22-24.

Chemical Market Research Assn., annual business meeting, symposium: Basic Forces for Change in Chemical Industry, Hotel Plaza, New York, May 27-28.

Synthetic Organic Chemical Manufacturers Assn., outing, Skytop, Pa., May 27-29.

Society of Nuclear Medicine, 4th annual meeting, Skirvin Hotel, Oklahoma City, June 20-23.



Special zinc-rich coating made by The Debevoise Company of Brooklyn protects interior of surge tank and equalizing pipe by sacrificial action. Vehicle is only a small portion of final coating, thus the extra durability of Parlon fortification is extremely important.

WATER, WATER EVERYWHERE BUT NOT A SPECK OF RUST

... because it's protected with **Parlon**®

Few maintenance men face a greater challenge than those responsible for hydroelectric plants. Varying water levels and high turbulence mean constant trouble from wet atmospheric exposures and dissolved oxygen. Surge tank and penstocks, butterfly valves and piping all are exposed to corrosive attack.

That's why, in this installation, a special zinc-rich paint was chosen. And, even more important, the vehicle used as a binder is fortified with major amounts

of Parlon chlorinated rubber. With its hardness, durability and resistance to corrosion, Parlon is ideally suited for such special metal paint formulations.

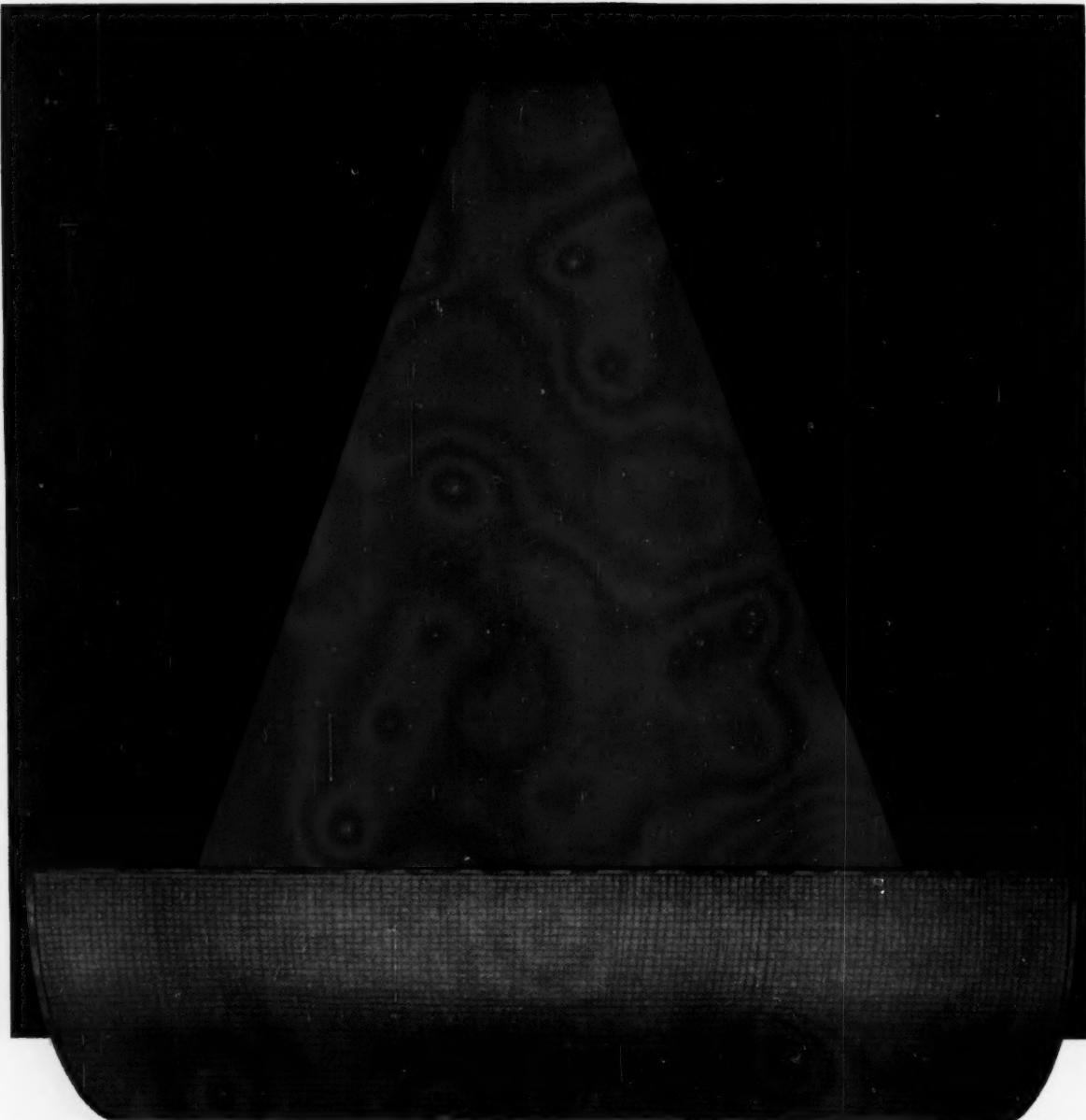
In fact, wherever metal, wood or concrete must withstand the corrosive attacks of water, acid or alkali, Parlon-based finishes are providing longer service at lower long-term cost. We'll be glad to tell you how a Parlon formulation can solve your specific maintenance problem. Just write for details.



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Quality? High, uniform, the standard of industry for over fifty years. Expert technical service rounds out the picture.



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Business Newsletter

CHEMICAL WEEK
May 4, 1957

Antifreeze makers who feared antitrust action are breathing easier. The grand jury considering the Dept. of Justice's charges on the subject ran out of time—such juries must act within 18 months—last week without returning an indictment.

There's still the possibility that another grand jury will be convened to consider the matter, but the Dept. of Justice has not yet indicated whether it will take the action to bring this about.

Look for some new letterheads from Union Carbide divisions.

Name changes approved at last week's stockholders' meeting effective this week: Union Carbide Corp. (instead of Union Carbide and Carbon Corp.), Union Carbide Chemical Co. (in place of Carbide and Carbon Chemicals Co.); and Linde Co. (nee Linde Air Products Co.).

At G. D. Searle's annual meeting, the big news is new products and continued profits. The Chicago pharmaceutical company racked up first-quarter sales of \$7.4 million, up 8% over last year, and managed also to hoist earnings 2½% (*for other firms' results, see p. 20*).

New products the firm will launch in '57 include Zanchol, an absturgent (cleansing agent or purgative) for treatment of gall bladder illnesses, and a powerful new tranquilizer, as yet untradenameed.

Searle may have hit upon a new approach to birth control with a new prescription-only item it will bring out shortly. The new compound, about which Searle will offer no details, is designed primarily to combat menstrual disorders, but appears also to have some effect in inhibiting conception.

The trend of rising sales, lowered profit margins that concerns U. S. companies is also a problem overseas. England's Imperial Chemical Industries Ltd. reports 1956 sales of \$1,218 million, up 6% over 1955, with net income down 19% to \$54 million. The company attributes the profit slump to rising costs plus the promise it made to the British government not to lift prices.

Standard Oil of California has combined its two chemical subsidiaries, Oronite Chemical Co. and California-Spray Chemical Corp., into the California Chemical Co. Calspray, an agricultural chemical maker, and Oronite, selling industrial chemicals, will continue to operate under existing management and names, as subsidiaries of California Chemical.

Business Newsletter

(Continued)

New York is the first state to enact an air pollution law in '57.

Only one of several states considering the matter this year (*CW, Jan. 12, p. 21*), New York has adopted a law that first creates a board to set standards; then, in 1959, the board will receive the power to enforce compliance with its standards.

After the board has set its standards, it will be able to levy fines of up to \$500 for offenses, and \$100/day for as long as the violation continues. It will also be able to get injunctions to halt persistent offenders—but these police powers won't be effective until July 1, '59.

•

Spencer Chemical will double polyethylene capacity of its Orange, Tex., plant. Construction of the new facilities will start at once. New capacity will be 90 million lbs./year.

The move highlights ethylene-polyethylene developments. Brea Chemicals' plans for a San Francisco Bay area plant to make ethylene might be nipped in the bud. Cold-turkey talks between Brea engineers and potential Bay area ethylene customers—Dow in particular—were about to get under way when Union Oil, Brea's parent firm, revealed plans to merge Brea with Union's carbon-black-producing affiliate, R. T. Collier (*CW Business Newsletter, April 27*). And now discussion of ethylene supply contracts with prospective customers has been postponed.

Tentative merger date for Brea and Collier is July 1. The name of the resulting Union division may be something like Collier Coke and Chemical. In any event, Brea will not build an ethylene-polyethylene unit at Union's Los Angeles-area refinery, and there's less hope now than a fortnight ago that it will build the same sort of unit near Union's northern California refinery at Rodeo. Still, with all the West Coast interest evident in ethylene (if not in its polymer), potential users feel that someone, maybe Tidewater Oil Co. or Standard Oil Co. of California, may well pick up the ball.

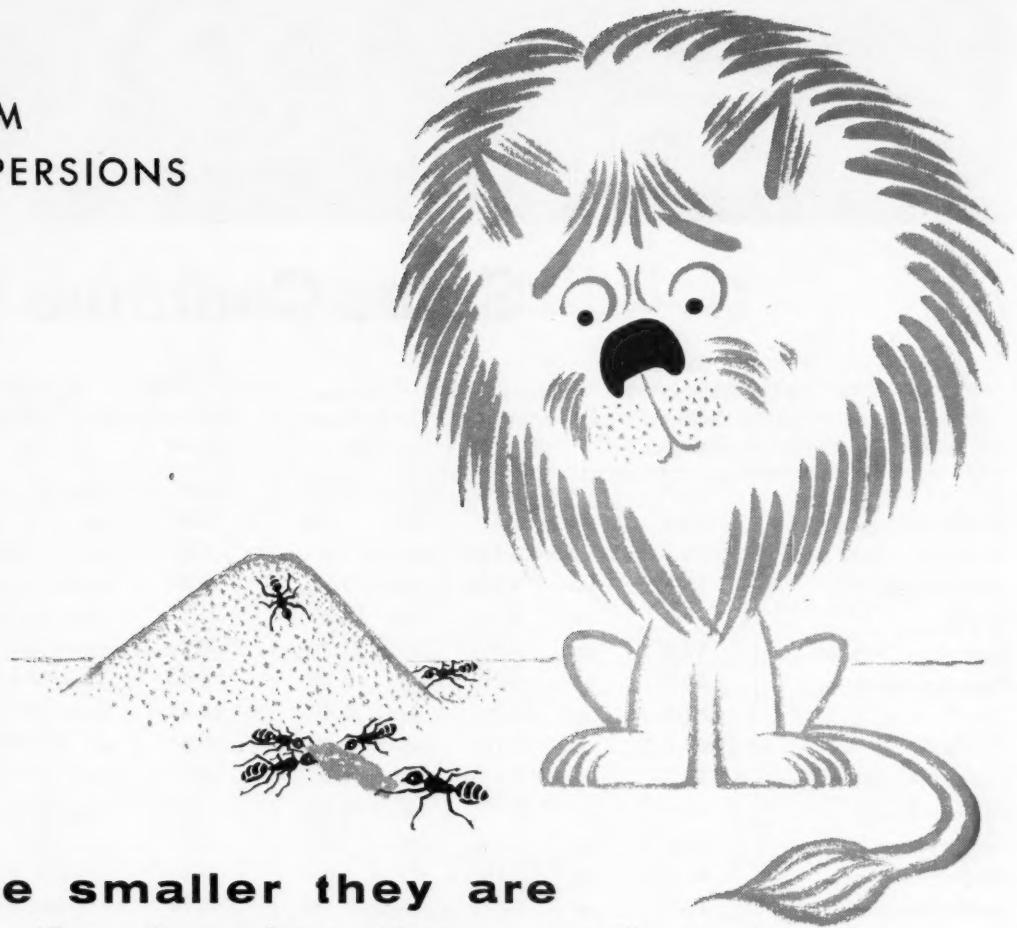
•

Dow's faith in the building industry as a plastic consumer was made plain this week with formation of a building products group as part of its plastic technical service. Concerned primarily with developmental work on the use of polystyrene plastics and foam, and saran plastic in such applications as plastic flashing, tank and pipe linings, the new crew will also offer fabricators increased technical service.

•

Highest-flying chemistry student is pole vaulter Bob Gutowski. Gutowski, in his last year at Occidental College in California, last week set a world's outdoor pole vault record of 15 ft., 8 1/4 in.

SODIUM DISPERSIONS



**the smaller they are
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The finer the particles of a sodium dispersion, the more they accomplish.

By exposing far greater surface area, sodium dispersions materially speed up reaction time and increase the yield of your process.

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stocks; as reducing agents; as catalysts and sponsors.

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CW 5-4-67

Chemical Week

Sales Continue to Rise

	Sales			Net		
	1st qtr. '57 (million dollars)	Change from 1st qtr. '56	Change from 4th qtr. '56	1st qtr. '57 (million dollars)	Change from 1st qtr. '56	Change from 4th qtr. '56
Allied Chemical	\$125.9	down 1.1%	down 2.7%	\$10.0 ¹	down 21.4%	down 16.5%
American Cyanamid	132.1	up 3.4%	up 5.1%	13.0	up 5.7%	up 8.4%
American Potash	10.9	up 15.3%	up 3.8%	1.3	up 6.4%	down 10.6%
Atlas Powder	16.8	up 9.1%	down 1.5%	0.9	down 3.3%	up 1.9%
Catalin	6.2	up 8.5%	up 11.8%	0.1	down 26.4%	down 3.3%
Commercial Solvents	13.6	up 4.8%	down 21.7%	0.7	down 26.1%	down 18.3%
Diamond Alkali	30.9	up 1.0%	up 5.9%	2.2	down 18.8%	down 4.3%
Dow ⁽⁶⁾	154.9	up 12.3%	down 1.0%	13.4	down 5.9%	up 1.1%
Du Pont ⁽³⁾	502.0	up 9.1%	up 1.4%	99.2	up 4.5%	up 42.7%
General Aniline & Film	32.5	up 3.8%	down 13.7%	0.9	down 36.5%	down 37.7%
Hercules Powder	60.9	up 6.1%	up 4.3%	4.1	down 10.0%	up 2.9%
Heyden-Newport ⁽⁴⁾	12.6	up 6.2%	up 7.1%	0.8	up 13.7%	up 52.7%
Hooker ⁽⁶⁾	25.9	up 3.1%	down 1.0%	2.2	down 20.8%	down 23.3%
Interchemical	27.9	up 2.6%	down 1.7%	0.8	down 24.8%	down 39.8%
International Minerals ⁽⁷⁾	30.5	up 6.6%	up 3.0%	3.1 ⁽⁵⁾	up 21.8%	up 159.7%
Merck	45.0	up 3.2%	up 5.2%	5.8	up 3.6%	up 22.6%
Monsanto	151.3	up 7.6%	up 12.5%	14.1	up 14.7%	up 43.1%
Pennsylvania Salt	19.1	up 10.8%	up 9.1%	1.0	up 15.7%	up 30.1%
Pfizer	50.7	up 15.7%	up 1.3%	5.5	up 19.3%	up 12.3%
Reichhold Chemicals	15.4	up 6.4%	(1)	0.6	up 15.9%	(1)
Rohm & Haas	43.9	up 8.7%	up 3.0%	4.1	down 2.7%	down 18.2%
Spencer ⁽⁷⁾	14.2	down 6.2%	up 47.0%	1.7	down 27.0%	up 117.7%
Stauffer	37.0	down 1.9%	down 6.9%	3.1	down 5.9%	down 24.1%
Texas Gulf Sulphur	17.8	down 17.9%	down 2.1%	5.6	down 22.7%	down 11.4%
Union Carbide	351.3	up 9.6%	down 9.3%	35.5	down 6.3%	down 21.9%
Victor	14.1	up 17.1%	up 5.6%	1.1	up 25.7%	up 8.5%
Wyandotte	19.5	up 8.0%	down 6.1%	0.9	down 5.9%	down 34.7%
SEMICHEMICALS						
Air Reduction	46.2	up 16.1%	up 4.5%	4.3	up 12.8%	up 5.1%
Celanese	46.8 ⁽²⁾	down 3.5%	down 8.8%	(1)		
Food Machinery	(1)			4.8 ⁽²⁾	up 5.0%	up 20.0%
Koppers	71.9	up 4.7%	down 13.1%	1.9	down 47.6%	down 27.7%
National Distillers	146.5	up 15.7%	down 6.1%	5.1	up 0.3%	down 9.6%
Olin Mathieson	139.0 ⁽²⁾	down 3.8%	down 1.7%	9.3 ⁽²⁾	down 8.0%	up 4.3%
Pittsburgh Coke	13.6	down 6.6%	up 32.0%	0.8	down 8.1%	down 33.3%
Revonier	30.0	down 15.3%	down 5.8%	2.0	down 46.4%	down 32.9%

(1) figure not available. (2) estimated. (3) excluding General Motors.

otors. (4) figures adjusted for Newport merger. (5) includes extraordinary gain, \$7

Notes, at cost	\$ 2,519,000	\$ 2,050,000	Less Income from Mandate	\$ 776,071,351	4% Cumulative Senior Preferred Stock—\$100 per value	7,674,485	7,674,485
Mr. (or Mrs.)	5,000,000	2,000,000		280,421,882	Common Stock—\$1 per value	13,568	13,568
from United States Treasury	3,000,000	2,794,500		1,037,193,234	Paid-in Surplus—Capital paid in by shareholders in excess of par value of shares	23,785	23,785
Interest and/or master, whatever lower	480,667	—	Dividends				
5,673,630	5,794,500		Preferred Stock				
297,521	255,015		\$4.50 Series (\$1.125 quarterly)	8,669,849	Net Income Retained in the Treasury, per accompanying statement	1,099,461	1,099,461
			\$3.50 Series (\$0.075 quarterly)	1,437,500	Less: Treasury stock	(159,618)	(159,618)
			Total Preferred Dividends	7,537,349			
			Total Dividends	204,863,206			
			BALANCE AT SEPTEMBER 30	212,400,455	SURPLUS ARISING FROM REVALUATION OF SECURITY INVESTMENTS		
			BALANCE AT BEGINNING OF YEAR	189,627,861	BALANCE AT BEGINNING OF YEAR	655,092,355	655,092,355
			Add—Adjustment resulting from revaluation of				
			Investment in General Motors Corporation	121,300,000			
			BALANCE AT SEPTEMBER 30 (Non-Financial)	764,342,355			
					TOTAL SURPLUS AT SEPTEMBER 30	\$1,703,632,633	\$1,502,004,497

—But Profit Margins Still Sag

Ratio, net to sales 1st qtr. '57	Ratio, net to sales 1st qtr. '56	Ratio, net to sales 4th qtr. '56
6.1%	7.7%	7.0%
9.8%	9.6%	8.7%
11.6%	11.3%	13.5%
5.5%	6.2%	5.3%
1.4%	2.1%	1.7%
4.9%	7.0%	4.7%
7.7%	8.9%	8.0%
8.7%	10.4%	8.5%
19.8%	20.6%	14.0%
2.8%	4.6%	3.9%
6.7%	7.9%	6.8%
6.4%	5.9%	4.5%
8.5%	11.0%	11.0%
3.0%	4.1%	4.9%
10.3%	9.0%	5.1%
12.9%	12.8%	11.1%
9.3%	8.7%	5.6%
5.4%	5.2%	3.9%
10.8%	10.5%	9.8%
3.6%	3.3%	(1)
9.3%	10.4%	11.8%
12.2%	15.7%	8.3%
8.4%	8.7%	10.3%
31.6%	33.5%	34.9%
10.1%	11.8%	11.6%
7.8%	7.3%	5.3%
4.6%	5.3%	6.7%
9.4%	9.6%	9.0%
2.7%	5.4%	3.4%
3.4%	4.0%	3.6%
6.7%	7.0%	6.3%
6.1%	6.3%	11.6%
6.6%	10.4%	9.2%

Sales increases brighten the earnings records of the major chemical companies, although net profits are still slipping. Companies covered in CW's first-quarter earnings survey tell why profits are sagging, what's ahead for the rest of '57.

Higher chemical sales and declining profits. That was the theme of most '56 annual reports, and it was heard again in financial statements covering the first three months of '57. Companies included in CW's earnings survey show an average sales gain of 3.5%, but their profits dipped an average of 5.6% below those of last year's first quarter.

Computed gains and losses in this quarter are traditionally matched with the first quarter of the previous year. But the first quarter of '56 is considered by many to be a poor standard, since most companies hadn't yet begun to level off after the unprecedented gains of 1955.

A more significant yardstick is the final three months of '56—a good, but far-from-spectacular, period. Even by this measure, however, first-quarter earnings have taken a substantial slip. The figures: sales up 2.3%, profits down 4.0%.*

Profit Pinch: What are the reasons behind the profit squeeze?

Most frequently mentioned are higher costs of materials, labor and freight. These are definitely up over last year, and price increases just haven't closed the gap.

"It doesn't look as though prices will ever catch up with increased costs," is the gist of many comments made to CW. This doesn't mean that red ink will be showing up on financial statements, but merely that profit ratios are going to continue at a somewhat lower, but still satisfactory, level.

Intense competition in most segments of the CPI has placed ever-increasing importance on the search for new and improved products. Union Carbide, for example, suffered a 6.3% profit decline (compared with the first quarter of '56) during the first quarter, yet budgeted \$65 million for research and development this year, compared with \$55 million during '56 and \$45 million in 1955. Carbide's executive vice-president, Howard Bunn, cites increased research expenditures as one of the chief factors in the earnings decline.

Koppers, which experienced its worst earnings drop in many years—47.6%—says the "principal cause was a softening in prices of styrene monomer, polyethylene and polystyrene." The decline, states Koppers, will amount to a \$3-4-million reduction in before-tax income by the end of the year.*

But the outlook is not entirely gloomy. Several large companies, notably Air Reduction, Pennsalt, Pfizer and National Distillers, chalked up big increases in both sales and profits. And the others, though they have not matched last year's quick gains, aren't overly worried about year-end totals.

*Omitting fertilizer companies, which have markedly seasonal sales.

ain, \$78 months to Feb. 28. (7) 3rd quarter ends March 31.

Hope in the Court

North Carolina chemical process firms, whose pollution abatement programs are hampered by land acquisition problems, may have a useful new tool if a bill just introduced in the legislature becomes law.

The measure would give private individuals the right to exercise the power of condemnation to acquire land if the State Stream Sanitation Committee or the State Board of Health rules the acquisition "necessary in connection with . . . control . . . or . . . reduction of pollution."

Legal observers think the law might be upheld in court tests on the grounds that it would aid in abating a nuisance. The bill reportedly was originated to assist Lithium Corp. of America (near Kings Mountain, N. C.) to acquire a 40-acre pond adjacent to its plant site. The company sends its plant wastes into the pond before they are allowed to enter nearby streams.

The proposed law also provides that prices for acquired land would have to be determined by the courts.

Petrochemical Plans

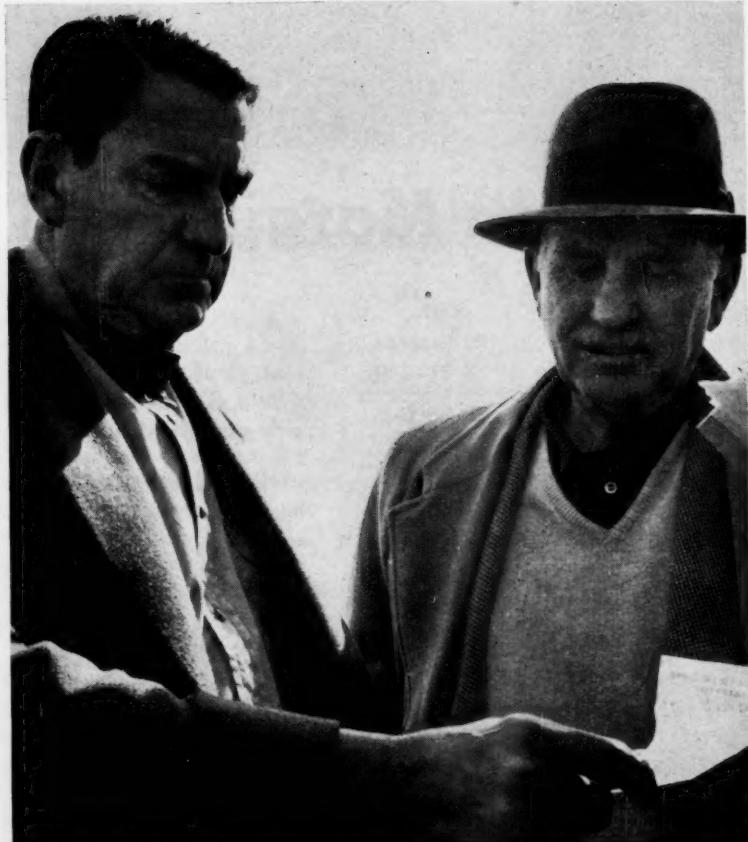
Shell Chemical Co. (U.K.) will increase production 4-5 times at its Partington, England, petrochemicals plant during the next five years, contributing to what may soon be one of Europe's largest petrochemical centers. Further details of the \$87-million expansion program:

- Shell's \$1.5-million Ziegler polymerization unit at Partington started turning out low-pressure polyethylene this week. It is slated to be producing at the rate of 1,000 tons/year by July. And ethylene oxide production will increase to 25,000 tons/year by late 1958. The ethylene plant represents a \$17-million investment.

- Output of all petrochemicals at Partington will double by mid-1958 and—according to Shell—will "easily" increase to about five times present production by 1962.

- As facilities grow, they will become more integrated with Shell's sprawling Stanlow refinery 27 miles away, where expansion plans call for spending \$140 million in the next 10 years.

The company is "actively pursuing" the possibility of commercially producing GR-S synthetic rubber.



QUEENY, THOMAS: For Monsanto, when costs rise, buy an oil company.

For Profit, Reach Backward

Monsanto Chemical Co. last week revealed some salient data on the first full year of operation following the 1955 merger with Lion Oil Co.

Speaking before financial analysts in New York, Board Chairman Edgar Monsanto Queeny and President Charles Thomas said that in 1956—exclusive of Lion Oil production—61% of Monsanto's \$200 million in raw materials purchases went for hydrocarbons or their derivatives. Salt accounted for 5% of dollar purchases; sulfur, 3%; limestone, 5%; phosphate ores, 3%; other materials, 23%.

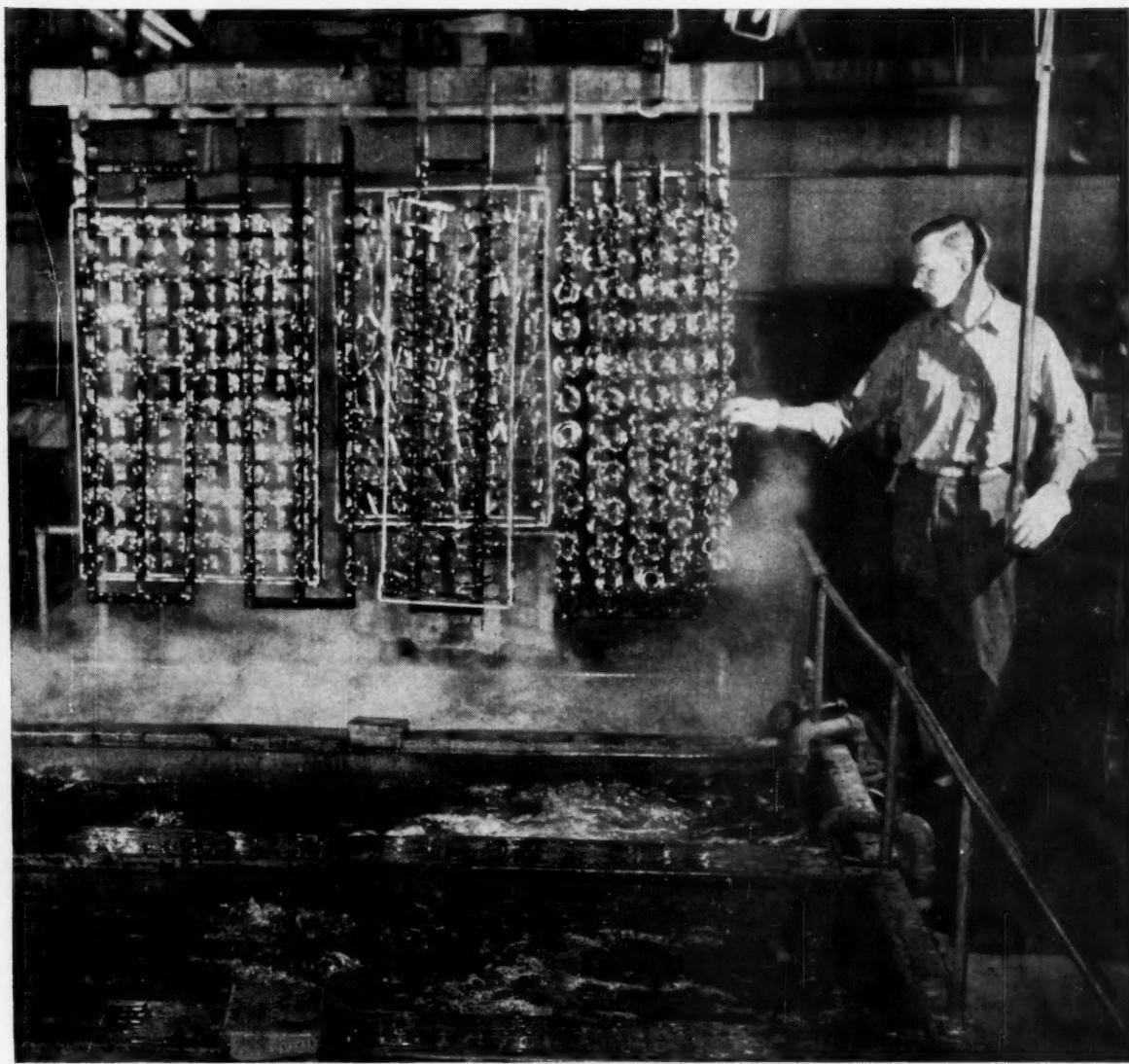
Costs Up, Too: Meanwhile, Queeny and Thomas point out, over-all cost of hydrocarbon raw materials has risen 110%, biggest increase among the group of purchases (salt rose 70%; sulfur, 66%; limestone, 72%; phosphate ores, 20%; others, 50%). Thus, Monsanto's basic position in hydrocar-

bons will stand it in good stead in the materials group showing the highest cost increase and greatest purchasing need.

Thomas and Queeny hinted strongly at a policy of going to more basic raw material sources for chemical production. The company is already basic in phosphate ores—it's the largest producer in the U.S., with a 35.5% share of total production.

Meanwhile, research efforts will continue to grow; this year's expenditures will be about \$21.6 million (1956: \$19.2 million). Thirty percent of Monsanto research is directed at developing new products in existing fields, 27% at exploring new fields, 43% at improving products.

For 1957, the company expects to show a "modest increase" in reported net income over the 1956 figures (see p. 20).



Hot rinsing plated parts at The Electric Auto-Lite Company, Woodstock, Illinois

How Auto-Lite's plating plant cuts waste-treatment costs in half!

Auto-Lite's castings go from the chrome plating baths into a "save rinse" where most of the adhering chrome solution is removed. Then castings get three more cold rinses and a final hot rinse.

When chromic acid concentration builds up to 5% in the "save rinse", the solution passes through a cation exchanger containing Permutit Q for the removal of metallic impurities. After concentration, this purified acid goes right back to renew the plating bath's strength.

Water from the cold rinses contains about 300 ppm of chromic acid. It is re-circulated through a cation exchanger containing Permutit Q which takes out metallic impurities. Then it is passed through an anion exchanger containing Permutit S which takes out and holds the chromate

ions, producing demineralized water. The chromic acid, absorbed as chromate in the anion exchanger, is recovered by regenerating with caustic soda and passing the regenerator effluent through the cation exchanger (Permutit Q). The recovered acid solution is concentrated by evaporation to the desired concentration for re-run in the plating bath.

Results: Waste-treatment of rinse water is completely eliminated. The demineralized rinse water can be re-used indefinitely to cut water costs. Plating baths last many times longer. Chromic acid consumption is cut 65%. Total waste-disposal treatment costs are cut in half! And they get a cleaner, higher-grade plating job.

In the same way, ion exchange cuts costs in anodizing, bright dipping, pickling, brass

etching, copper stripping. It also recovers copper and zinc from rayon wastes, concentrates uranium from complex ores, removes impurities from sugar, drugs, antibiotics.

We'll be glad to look into ways ion exchange might improve *your* process. The Permutit Company, Dept. CW-5, 330 West 42nd St., New York 36, N. Y. or The Permutit Company of Canada, Ltd., Toronto 1, Ont.

PERMUTIT®

rhymes with "compute it"
ION EXCHANGE for Water Conditioning
Chemical Processing • Industrial Waste Treatment

HOW MUCH PRODUCTION GROWTH SINCE 1929?

Figures in parentheses represent preliminary Commerce Dept. data on 1956 production. In millions of pounds except where otherwise noted.

40% per year and over

Titanium sponge (14,500 tons)
Antibiotics (1.9)
Polyethylene (558)
Styrene plastics and resins (695)
Butadiene (1,500)
Detergents, synthetic (3,200)

30-40%

Melamine resins (91)
Pentaerythritol (62)
Argon (326 million cu. ft.)

4%

Sulfuric acid (15,827 thousand s. t.)
Sulfur, crude (6,470 thousand l. t.)

3%

Benzene, total (328 million gal.)
Sodium carbonate (soda ash) (5,010 thousand s. t.)
Ethyl alcohol (469 million proof gal.)

2%

Ethyl acetate (92)

0-2%

Creosote oil (122 million gal.)

20-30%

Polyvinyl resins (721)
Helium (267 million cu. ft.)
Ammonium sulfate, synthetic (1,087 thousand s. t.)
Urea resins (228)
Xylene (128 million gal.)
Perchlorethylene (183)

15-20%

Plastics and resin materials, total (3,900)
Coumarone-indene and petroleum polymers (246)
Plasticizers (1955: 201 million gal.)
Methanol, synthetic (244 million gal.)
Phthalic anhydride (315)
Phosphoric acid (3,573 thousand s. t.)

10-15%

Acetic anhydride (910)
Formaldehyde (1,339)
Phenol, synthetic and by-products (518)
Sulfa drugs (3.1)
Ammonia, synthetic anhydrous (3,337 thousand s. t.)
Nitric acid (2,399 thousand s. t.)
Chlorine gas (3,784 thousand s. t.)

7 1/2-10%

Oxygen (32 billion cu. ft.)
Acetylene (9,254 million cu. ft.)
Calcium carbide (1,025 thousand s. t.)

6-7 1/2%

Acetic acid (554)
Sodium hydroxide, liquid (4,212 thousand s. t.)
Carbon black (920 thousand s. t.)

5%

Calcined gypsum (8,900 thousand s. t.)

Chemicals Pace Production Race

The dazzling burst of production that began in the U.S. in 1939—and still continues—is far from the broad, sweeping advance that national production averages seem to indicate. What has—and what hasn't—boomed is pointed up in a study of 288 products and services unveiled this week by the Commerce Dept. Chemical highlights of the report are shown on this page.

The time covered runs back to 1929 in the case of older items, or back to the first year of substantial output for items introduced since '29.

Chief findings of the report that are particularly encouraging to the chemical industry:

- About one-third of the items increased an average of 7 1/2% per year or more—at least 2 1/2 times the over-all national average. This select group—dominated by some 40 different chemical products—includes some that show gains of more than 40% per year.

- The largest number of items checked—about one-half the total—show much smaller growth. They made gains, but fall below the 7 1/2% break-point chosen by the Commerce Dept. to differentiate between the fast-growing and the moderately growing lines. About half of the items in this category have exceeded the long-term national average of 3% growth per year—included are such items as paper, sulfur, rubber and crude petroleum, among the basic producers' materials. But other basic materials have fallen behind the national pace, notably steel and cement.

- Actual declines were posted by about one-sixth of the items studied, but very few are products of the



Trane saves \$27,000 a year burning coal the modern way

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Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

As part of its current \$12 million expansion program at all locations, The Trane Company, La Crosse, Wis., a major air-conditioning and heating equipment manufacturer, has recently modernized its power plant. Steam generating facilities were changed over entirely to a coal-fired operation and a 70,000 lb./hr. boiler was added. Coal and ash handling is automatic.

Trane has found that burning coal the modern way pays off in several ways. Overall cost of steam generation is cheaper. Fuel supply is readily available and dependable. And fuel cost savings amount to 25% over the next most economical fuel, totaling about \$27,000 a year for the La Crosse plant alone.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

BITUMINOUS COAL INSTITUTE
Southern Building • Washington 5, D. C.

chemical industry. Most of the declines have been less than 3% per year, but the tendency of an increasing rate of shrinkage in some lines since 1951 is plain. Among the 47 lines that have declined, 13 are in textiles, apparel and leather products; seven are in building materials and equipment, and six are in railroad equipment and accessories.

Specific chemical items that have been declining: lead (refined grade, new supply); turpentine; natural soap; and methanol.

As would be expected, new products dominate the fast-growing category. The 37 fastest-stepping lines have all been introduced in the past 25 years or so, and most of them since the mid-'40s.

Fastest growth was rung up by the leaders during the war and in the postwar period. Commerce Dept. analysts detect a definite slowing down of expansion rates since 1951. New consumer durables introduced after the war, for example, racked up tremendous percentage gains in the early years, now find it impossible to keep up that growth rate, though production is at high levels. Before the pre-1951 expansion rate is hit again, new lines of goods to attract consumers must be introduced. The chemical industry's in a prime position to produce these new pace-setters.

EXPANSION

Zirconium: Columbia National Corp., jointly owned by Columbia-Southern Chemical and National Research Corp., is building a \$7.5-million zirconium ore-processing plant near Pensacola, Fla. The new unit is expected to produce \$5 million worth of zirconium annually.

Fuel Elements: Sylvania-Corning Nuclear Corp. will build a plant in Hicksville, N. Y., to produce atomic fuel elements for nuclear reactors on a commercial scale. Pilot-plant operations have been under way at Hicksville since 1952. Completion date: late summer.

Carbon: Mountaineer Carbon Co. will build a \$2-million carbon-calcining plant at Cresap, W. Va., with startup slated for next January. Contractor: Seabright Construction Co., Wheeling, W. Va.

Manganese-Chromium: Union Carbide Ore Co. will build and operate a manganese and chromium ore-processing plant at Warwick, Va. The unit will grade and classify 30,000 tons of ore monthly.

Sulfur: Allied Chemical & Dye will build a sulfur recovery plant at Linden, N. J., to remove 60 tons/day of elemental sulfur from hydrogen sulfide gas produced at the Bayway refinery of Esso Standard Oil of New Jersey. Engineering and design is being done by Girdler Co.

COMPANIES

Jefferson Lake Sulphur Co. shareowners have voted to increase the company's authorized common shares from 1 million to 2.5 million and to give the firm the right to issue debentures. Financing plans would be determined by the company's final plans for the development of its current exploration program.

• **Weyerhaeuser Timber Co.** stockholders have approved a proposal by the company's board of directors to merge with Kieckhefer Container Co. and Eddy Paper Corp. Weyerhaeuser would exchange 148 common shares for each Kieckhefer common share and 10 Weyerhaeuser shares for each Eddy share. The new facilities would operate as a division of Weyerhaeuser.

FOREIGN

Synthetic Rubber/India: Firestone Tyre & Rubber Co. of India, Ltd., will enter into a partnership with National Industrial Development Corp. to set up a 20,000-tons/year synthetic rubber plant near Bombay. Firestone has not yet decided whether it will make a direct investment in this state-owned project or extend long-term credits for machinery.

• **Aluminum/Belgian Congo:** The Inga hydroaluminum project in the Belgian Congo is beginning to take shape. Cost of the initial development stage has been pegged at \$300-400 million. The Syndicat Belge de l'Aluminium, a group that involves virtually all of Belgian industry, will put up 50% of the money. The other half will come from these non-Belgian investors: Reynolds Metals Co. (U.S.); Aluminium Ltd. (Canada); Vereinigte Aluminium-Werke (Germany); Montecatini (Italy); S. A. pour l'Industrie de l'Aluminium (Switzerland); and Pechiney-Ugine (France). Inga will be one of the world's largest hydroaluminum projects, will take 7-9 years to complete, have a power potential of 20 billion kw.

• **Newspaper/India:** Bagasse, rather than conventional coniferous wood, will be used by a proposed newsprint plant to be set up in Hyderabad, India. Capacity: 30,000 tons/year. Bagasse, from Nizam Sugar Factory wastes, will become available when the government doubles the output of a nearby alcohol plant.

• **Synthetic Rubber/Japan:** Goodrich Chemical Co. will agree to a technical tie-up with Nippon Zeon in setting up a synthetic rubber plant in Japan. Nippon Zeon, a vinyl chloride manufacturer, will be backed by the Yokohama Rubber Co., a tire manufacturer, and other companies belonging to the Furukawa group (of which Nippon Zeon is a member). Initial production will be 8,500 tons of rubber.



Good news for mukluk-makers *and others*

UP NORTH, where a snug pair of boots can make the difference between toes and *no* toes, Eskimos soften the hides by chewing. Here at home, glycerine does the same job—faster and better.

But Shell Chemical's glycerine takes on hundreds of other important industrial jobs. It goes into tough, fast-drying paints and enamels . . .

helps put the kick into mining explosives. It makes cellophane flexible, holds freshness in tobacco and candy, goes into manufacture of textiles and toothpaste, glues and glass cleaners.

High-purity glycerine is another example of Shell Chemical's contribution to industrial progress.

Shell Chemical Corporation

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there's a future in this crystal

TRIMETHYLOLPROPANE BECOMES A COMMERCIAL CHEMICAL THROUGH CELANESE ALDOL PRODUCTION

The properties of this free-flowing flaked polyol have always intrigued the chemist. Its ability to improve the quality of paints, protective coatings, and particularly the exciting new polyurethane foams, promised Trimethylolpropane a big role in these and other applications. But, until Celanese developed a method for high volume, low cost production, the usefulness of

Trimethylolpropane was severely limited.

New aldol processing units at the Celanese Chemcel Plant in Bishop, Texas, are now turning out commercial quantities of Trimethylolpropane — making available to manufacturers a product possessing low water content, low melting characteristics, and exceptionally high purity.

The development of Trimethylolpropane into

a commercially practical chemical is an example of how Celanese research and product development teams are finding new ways to give industry what it needs in more productive basic and intermediate materials.

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aviation, building,
electrical, paper,
pharmaceutical, plastics,
surface coatings, textiles.

Celanese
CHEMICALS

Washington Newsletter

CHEMICAL WEEK
May 4, 1957

Those prospective cuts in the Commerce Dept. budget are beginning to worry chemical marketers. It's the proposed elimination of the Business & Defense Services Administration's industry divisions—including one covering chemicals and rubber—that has worried industry to the extent that it's appealing to Congress to rescind the cuts. Unless a House decision to eliminate this \$3.5-million operation (*CW Washington Newsletter, April 13*) is reversed by the Senate, the industry divisions will have to be disbanded after June 30.

Why is BDSA's chemical division so important to chemical firms? Primarily because it can coordinate military demands for chemicals, thus assure they won't be so great a part of total capacity that civilian users would have their supplies cut off. And with the anticipated increase in military demands for such materials as perchlorates, hydrogen peroxide and other rocket propellents, BDSA's actions assume a new importance.

Right now, BDSA is looking into some 20 chemicals' prospective supply pinches that would result from planned military expansions. Also in preparation: A report on world plastics materials (similar to last year's fast-selling world pesticides survey), special market outlook reports on antibiotics, silanes and silicones, ethylene glycol and other chemicals.

The first real test of the defense essentiality clause of the reciprocal trade laws is in the works. President Eisenhower, upon recommendation of the new defense mobilizer, Gordon Gray, last week agreed to hold his own investigation of imports of crude oil to determine whether they are impairing national security—and, if they are, to fix quotas or otherwise cut them down.

This is the procedure written into the trade laws by the last Congress. First to ask its application were the independent oil producers, who complained that increasing oil imports by the major producers was stifling their expansion and usurping their market.

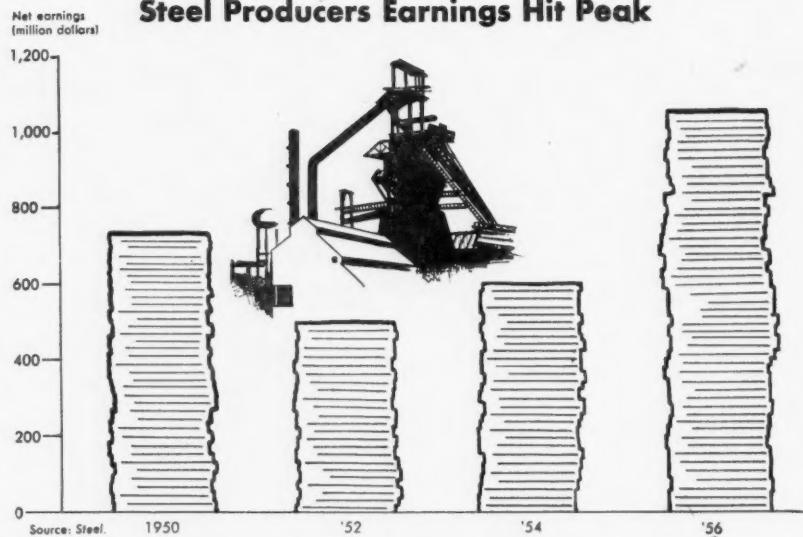
Gray has certified that the majors' import plans may impair the independents' output to the point where national security is endangered. And now the President is expected to appoint a commission of private citizens to review ODM's lengthy hearings and make its own finding.

The investigators may take months to complete the job but they are expected to outline the procedure for other import-fearing industries to use. Among those who supply the chemical industry with raw materials, producers of fluorspar are alone in asking aid. But those who have been opposing imports withdrew their application when they were included in government support purchase programs. These programs, however, have been severely curtailed by Congress, and fluorspar may be put back on the ODM list—despite objections of some spar-consuming groups.

Charting Business

CHEMICAL WEEK
May 4, 1957

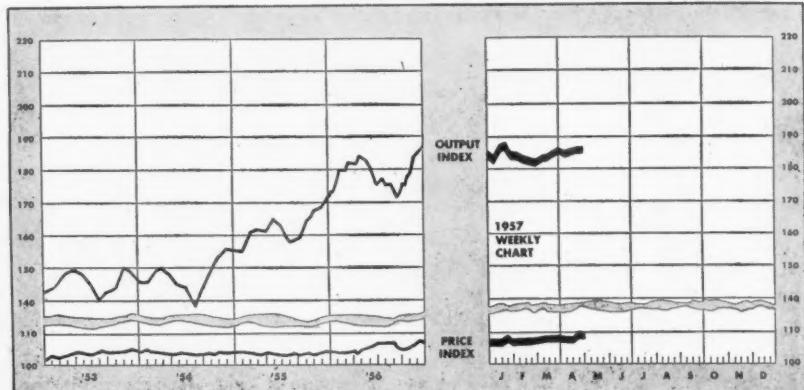
Steel Producers Earnings Hit Peak



Steel Profits Rise, but Margin Drops

LAST YEAR, net earnings for the steel industry hit a new high of \$1,059 million, slightly above the previous year's \$1,048 million, despite a drop in steel output. And although the industry earned more money last year,

it wasn't able to keep as much of the sales dollar. In '56, net profit was 7.28¢/dollar, compared with 7.82¢/dollar in '55. Last year, federal taxes took a \$1.01-billion chunk from the industry's earnings; in '55, \$1.05 billion.



Business Indicators

WEEKLY

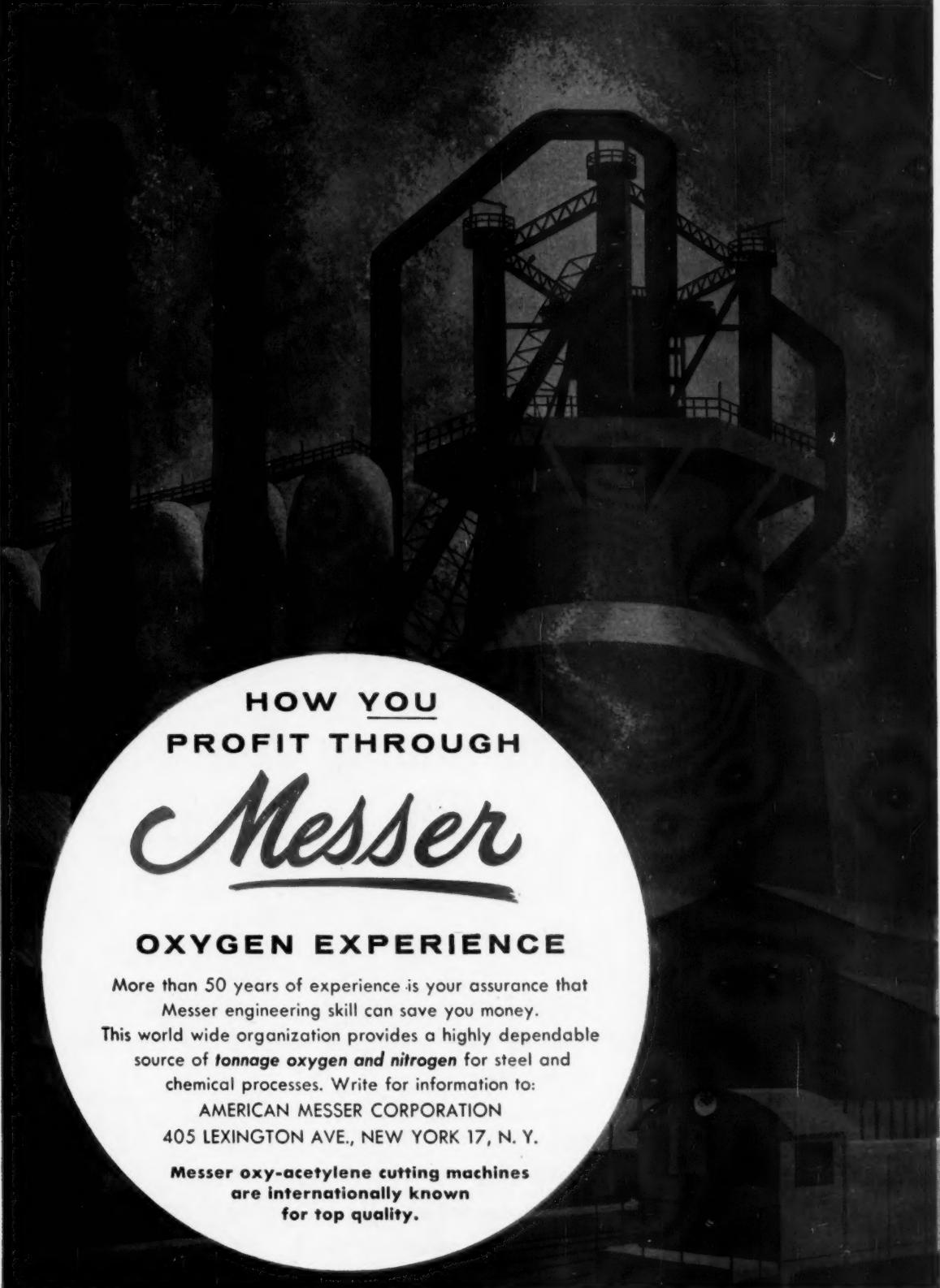
Chemical Week output index (1947-49=100)..... 186.8
Chemical Week wholesale price index (1947=100) ... 109.8
Stock price index of 11 chemical companies
(Standard & Poor's Corp.) 43.99

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100).....	186.8	186.6	183.1
Chemical Week wholesale price index (1947=100) ...	109.8	109.8	105.9
Stock price index of 11 chemical companies (Standard & Poor's Corp.) 43.99		42.93	49.17

MONTHLY PRODUCTION (Index 1947-49=100)

All manufacturing and mining 148
All chemical products 188
Industrial chemicals 208

	Latest Month	Preceding Month	Year Ago
All manufacturing and mining 148		147	143
All chemical products 188		186	179
Industrial chemicals 208		207	201



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SALES AND DISTRIBUTION



CHEMICAL display, politically unobjectionable, lures Egyptians into exhibition hall.

Germany Shows Its Stuff at Cairo

Alert to the trade possibilities inherent in the turbulent Mideast political situation, West Germany industrialists put on a show in Cairo last month—the largest national trade fair ever held in Egypt. There's every indication that the fair was a smash success, that sharper competition is looming for U.S. chemical producers in the \$140-million Mideast market.

By Egyptian standards, the German exhibition was enormous. It filled 50,000 sq. meters of open area and all seven halls (15,000 sq. meters) of the Cairo fair grounds. That made it far bigger than similar shows held by the Soviet Union and its satellites. Some 425 firms participated.

The West German chemical industry occupied 10% of the display space; metallurgical industry, 3%; machinery, 37%; electrical industry, 15%, and the transportation industry, 12%.

West German chemical exhibitors stressed items of special interest to the Mideast, particularly Egypt: dyestuffs

Exporting Country	Chemical Exports (million dollars)			
	To Nonsterling Mideast Countries* (Jan.-Sept.)	1956	1955	To Sterling Area** in Mideast (Jan.-Sept.)
	1956	1955	1956	1955
United Kingdom	\$21.1	\$22.1	\$13.9	\$12.6
West Germany	16.6	19.5	1.7	1.3
United States	16.3	13.3	2.6	1.9
Italy	9.5	7.7	0.9	0.7
France	7.5	8.2	1.0	0.9
Netherlands	4.5	3.5	1.3	1.7
Belgium-Luxemburg	3.1	2.8	0.5	0.4
Total, all countries†	\$85.1	\$86.5	\$22.3	\$19.8

Source: United Nations Commodity Trade Statistics.

*Egypt, Saudi Arabia, Iran, Anglo-Egyptian Sudan, Federation of Ethiopia and Eritrea, Israel, Lebanon, Italian Somaliland, Syria.

**Aden, Bahrain, Iraq, Jordan, Kuwait, Libya, Qatar, Muscat and Oman, Trucial Oman, Yemen.

†Does not include exports of countries not reporting to the UN, e.g., Switzerland, and Russia and its satellites.



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No matter what products you manufacture, your chemists can very likely uncover some important way in which hydroxylamine sulfate can improve either the quality of those products or your production cost picture—or both.

Hydroxylamine sulfate has already proved its value as an intermediate chemical in the paint and rubber industries, and as a processing chemical in the textile and photographic fields. Our

chemists are daily exploring further possible uses in these and other fields.

We invite your chemists to join us in exploring the unknown for hydroxylamine sulfate, and we should be happy to send you a quantity sufficient for them to experiment with.

As basic manufacturers of hydroxylamine sulfate, we already have considerable knowledge of its versatility. Request your free supply today on your letterhead and we'll ship it promptly, together with all the latest technical information at our disposal.

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SALES

and auxiliaries for cotton textiles; plastics formulated for tropical use; fertilizers and insecticides useful for cotton and fruit plantations; and pharmaceutical products for maladies common in Mideast countries.

The Mideast consumes \$140 million worth of chemicals a year, some \$1.8 billion worth of other exports. The nonsterling area is the big buyer: in the first nine months of 1956, it bought \$85 million worth of chemicals, while the sterling area took only \$22.3 million.

Egypt, of course, dominates Mideast chemical consumption. Between January and September in '56, Egypt purchased some \$33 million worth of chemicals, or some 31% of all Mideast chemical imports. But that figure is sharply off from the 38% (\$40.5 million) racked up in the comparable '55 period.

The United Kingdom, West Germany and the U.S. lead the field in chemical exports to the Mideast. But West Germany, according to UN data, slipped badly in the first nine months of '56, while the U.S. made substantial gains and the U.K. held steady.

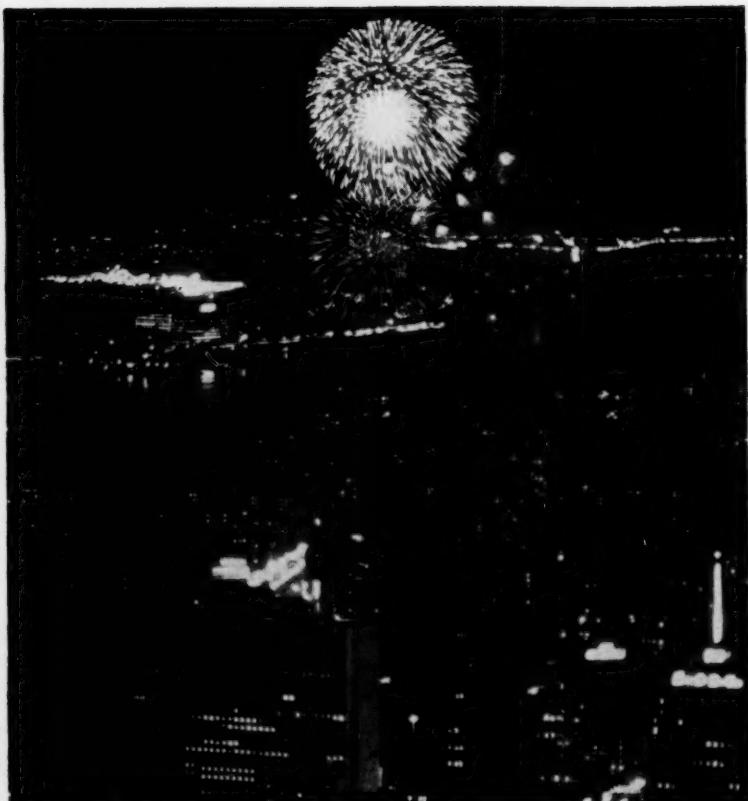
Noteworthy: although West Germany's chemical exports to the Mideast dropped from \$20.8 million to about \$18.3 million in the nine-month period, exports of other West German products climbed. The all-export total for Jan.-Sept. '56 was \$223 million, some 20% ahead of '55's first nine months.

Behind the fair was a twofold aim of West German industry:

- Raise a challenge to the increasing Mideast trade effort of the Soviet Union and satellites.
- Fill the commercial vacuum left by Britain and France in the Mideast. West Germany's businessmen stressed "good political reputation" and "lack of an imperialist-colonialist label."

In poverty-stricken Cairo, more than 500,000 people paid 15¢ to attend. The East Germans felt moved to take Cairo newspaper display space, announce a fair of their own in October. And experienced European observers believe that the Germans made sales with the nonimperialist pitch.

Adenauer's recent visit to Iran and Turkey and West Germany's expressed interest in Iranian oil fields and pipelines are other indications that the U.S. will be hard pressed to hold its newly won sales gains in the Mideast.



FIREWORKS burst over New York as Japanese . . .

Rockets Open a Trade Show

Hardly had West Germany's Cairo exhibition shuttered its doors (see p. 32) than another big trade show opened to the accompaniment of a rocket barrage. This time the site was New York's mammoth Coliseum where the U.S. World Trade Fair was holding forth.

More than 100,000 buyers and a million consumers peered goggle-eyed at some 3,000 exhibits from 59 foreign countries.

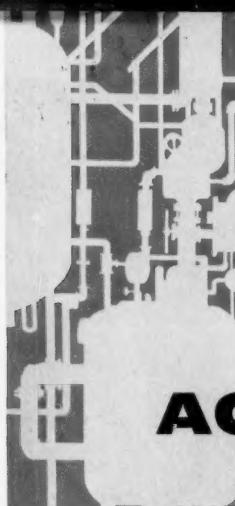
While most items on display were consumer products, some heavy-industry wares were shown. And there were many national exhibits aimed at stimulating new investments. Here are the highlights for the chemical process industries:

Textiles: Snia Viscosa (Milan, Italy) stopped traffic with a 14-product display. Most attention focused on Rilsan, a polyamide fiber derived from castor oil. Though somewhat more costly than nylon, Rilsan is claimed to have 10% more covering power than

other polyamides and to give 10% more yardage per pound. It's also said to be allergyproof and able to "filter perspiration away from the body." Snia Viscosa will export to the U.S. now, intends to manufacture here later.

Another attention-getter was the firm's Papertex, a polyamide material that looks like paper. It's claimed to be resistant to tearing, shrinking, cracking and to water and flames, insectproof and dimensionally stable. Potential uses: in cartography, drafting, for permanent records.

Novelties: Raj & Callemy, a Belgian firm, displayed an unusual rubber-type coating dubbed Rubio. It is said to be waterproof, acid resistant, corrosion resistant and an electrical insulator. The producer also claims that it retains permanent elasticity and never dries completely, can withstand temperatures between -70 and 170 C without undue effect. R&C offers Rubio in paste or liquid form for



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SALES

brush or spray application on most any surface.

Mum concerning its composition, R&C expects that Rubio will retail for \$3.50-\$4/gal. here. One liter will cover about 2 sq. meters.

National Displays: Japan was vigorously pushing elemental carbon products, scientific apparatus, and oddly enough, fireworks (*see cut*). Toyo Carbon displayed graphite electrodes of high oxidation resistance, high mechanical strength and low electrical resistivity. The Carbon Assn. of Japan stressed "better quality at reasonable price" for industrial carbon products. Hitachi Ltd., giant Japanese industrial combine, paraded a brand-new electron microscope, the HU-10. It is adaptable to various power supplies, has high resolving power, gives electronic magnification up to 100,000 and has a vacuum airlock system for the specimen chamber and camera. In the chemical field, Hitachi also makes varnish ingredients, synthetic resins, chemical processing equipment.

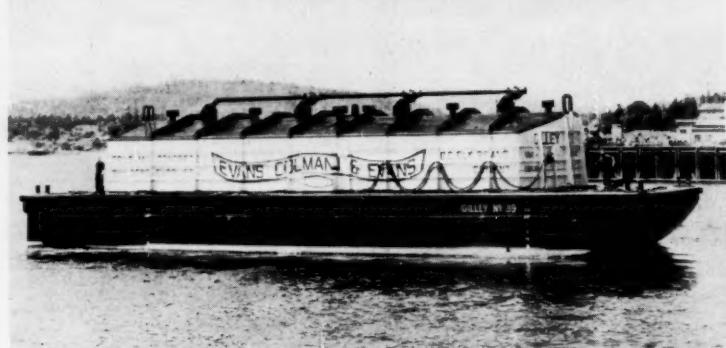
Marutamaya Ogatsu Fireworks Co. probed American market potential with a small booth and a huge display on opening week. Although amusement outlets for fireworks are restrict-

ed by state safety rules, MO hopes to pick up sales in specialty items for advertising, industrial, military, signal and other uses.

Iron curtain countries stepped up efforts to spark U.S. sales with large exhibits. Yugoslavia presented an impressive display of copper products—wire, cable, sheet and tubing—and directed attention to its resources in cement, asbestos, magnesite, marble and quartz.

Poland, though without a chemical display, maintained a chemical trade specialist at its booth. Right now, the country still has substantial quantities of benzene available for export; Polish benzene is already moving into U.S. markets in volume. The dyestuff industry is being quickly revived and Poland expects to develop a thriving export trade. Trade attachés at the fair seemed optimistic about Poland's chances of getting economic assistance from the U.S., also about relaxation of import restrictions on certain antibiotics.

In most national exhibits and in many exhibits of individual firms, free-trade concepts were skillfully promoted, further evidence of the marketing drive of foreign producers for the U.S. dollar.



Pneumatic Push Speeds Barging

Self-unloading reached cement barges recently when Gilley Bros. Ltd., put this new \$100,000 unit in service on British Columbian waterways. What's unique about the barge is its air-fluidization system to move cement. It's loaded through a top transfer line into four V-bottom compartments, which discharge into a central air-slide. When air is blown

through the air-slide fabric, the cement fluidizes and flows by gravity to a pump for removal from the barge.

Capable of discharging its cargo at rates of 86-120 tons/hour, the barge requires only two men for mooring operations and only three manhours for the job. All necessary equipment is carried aboard.



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freight

ammonia

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Excerpts
From
The Chemical
Hall of FAME



Victor Grignard

(1871-1935)

Received the Nobel prize in 1912 for his development of the *Grignard reaction* which was of considerable importance in synthetic organic chemistry.

By 1912 Foremost's El Dorado Division already had more than 20 years' experience supplying coconut oil and its by-products of the finest purity and consistent uniformity.

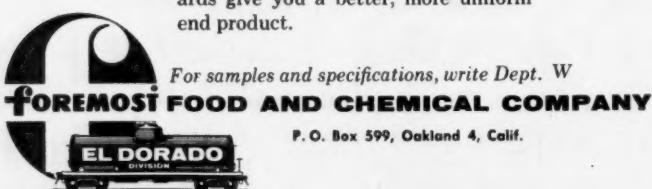


Fatty Acids	Caprylic	Eldhyco*	Capric	Lauric
	Coconut		Palmitic	Myristic
Methyl Esters	Caprylate	Eldo 18*	Caprate	Laurate
	Coconate	Myristate	Caproate	Palmitate

*T.M. Reg.

For Example: **ELDO LAURIC ACID**

96-99% pure. (Purest Lauric Acid commercially produced.) Readily available at an attractive price. Eldo's high standards give you a better, more uniform end product.



In New York: H. Reisman Corp. In Detroit: Harry Holland & Son, Inc.
In Chicago: M. B. Sweet Co. In Cincinnati: Howard Dock In Cleveland: F. W. Kamin Co.

SALES

Purchasing on Trial

Before a "jury" of an expected 200 chemical buyers, a panel of four well known sales executives will probe weak spots in modern chemical purchasing department operation. Occasion: the meeting of the Chemical and Allied Buyer's Group of the National Assn. of Purchasing Agents at Atlantic City's Convention Hall on May 28.

Dubbed "Chemical Purchasing Agents On Trial," the program is an outgrowth of recent CHEMICAL WEEK surveys on sales-purchasing relationship (Feb. 26, p. 90) and "backdoor" selling (March 9, p. 126). Program speakers will examine in detail the current problems uncovered by the survey. Although arrangements are not yet complete, this is the way the agenda tentatively shapes up:

- Inadequate technical knowledge on the part of chemical buyers, and means of remedying the situation, will be discussed by E. E. Fogle, Carbide and Carbon Chemicals Co. vice-president. He will assess its relation to the salesmen's practice of bypassing purchasing agents, the need for technically trained buyers.

- Lack of sufficient authority to make purchasing decisions is the trouble area that Eli Lilly's G. L. Varnes will investigate. Varnes, executive director of agricultural and industrial products for the firm, will suggest where purchasing should place on a company organization chart, if high authority is justified by purchasing's corporate position, and steps to improve buying management.

- Practices that result in poor handling of salesmen will be analyzed by A. B. Clow, general manager of American Cyanamid's Farm and Home Division. Though only a small minority of chemical buyers abuse salesmen, the problem is of major import to sales and buying groups.

- Excessive demands for service—one charge that salesmen levy against buyers—is the topic that is to be examined by T. C. Tupper, Monsanto's director of sales for the Organic Chemicals Division. Up for special emphasis: rush shipments, extraordinary credit leniency, excessive technical-service requests. Moderating the program: CW Editor, Howard C. E. Johnson. He will explain how CW came to publish the articles that sparked the idea for the meeting.



if you ship

chemicals...

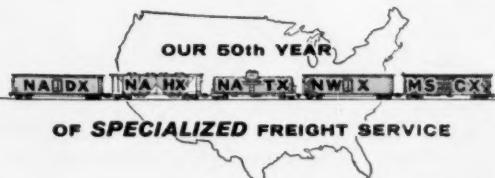
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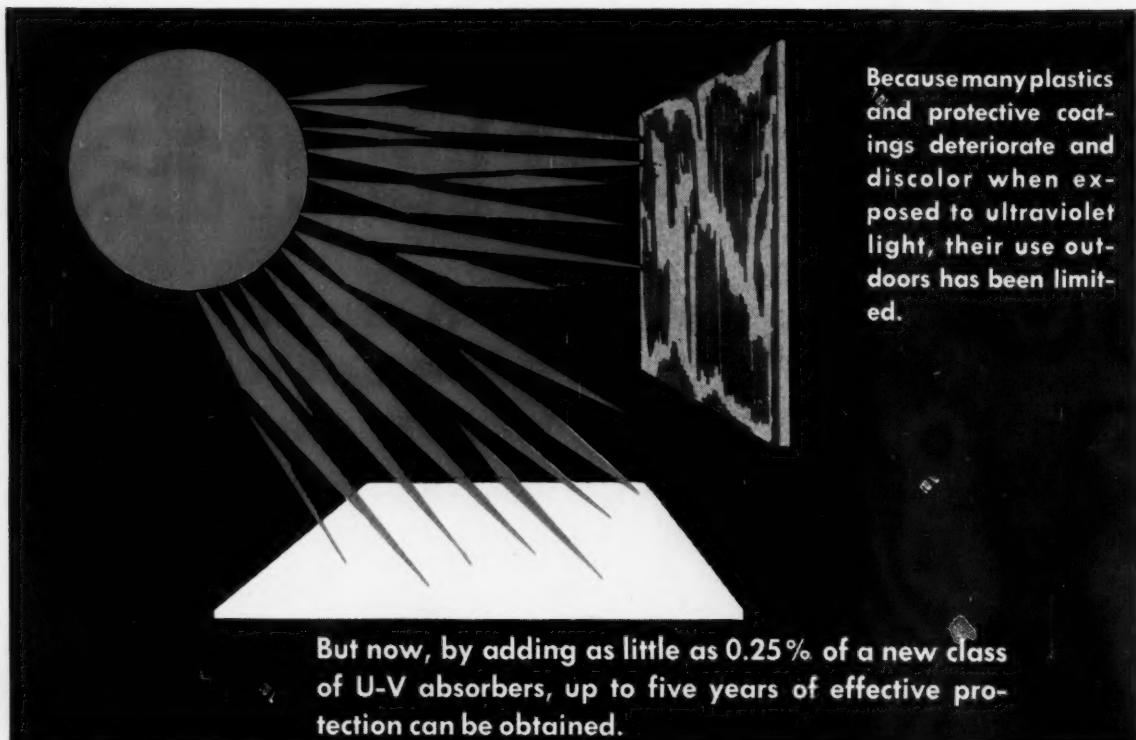
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RESEARCH



Because many plastics and protective coatings deteriorate and discolor when exposed to ultraviolet light, their use outdoors has been limited.

But now, by adding as little as 0.25% of a new class of U-V absorbers, up to five years of effective protection can be obtained.

New Way to Protect Products from the Sun

Researchers have long sought to improve the light stability of dyes, paints, plastics and fibers exposed to the sun. But for the most part they've made their efforts in one direction: they've simply tried to find products that are inherently more light stable. Now they're off on a new tack: they're trying to find "light stabilizers"—compounds that could be formulated into the finished product.

And so far, there are a fistful of substituted benzophenones that promise to do the job.

Two Commercial: Both General Aniline Film (Antara Chemicals) and American Cyanamid are now making such compounds on a modest commercial scale. Antara's entries are called Uvinuls, encompass 2,4 dihydroxybenzophenone (Uvinul 400); 2,2' dihydroxy-4,4' dimethoxybenzophenone (D-49); 2 hydroxy-4 methoxybenzophenone (M-40). Another, Uvinul 490, is essentially the same as the D-49 with isomers of the latter added to impart different solubility

and compatibility properties. Cyanamid's lone commercial offering is its UV Absorber 9, which is the same chemically as Uvinul M-40.

Although it doesn't have any products commercially available at the moment, Monsanto admits it has been researching benzophenones as ultraviolet stabilizers for four years. Its work on a more durable formulation for polyvinyl chloride last spring (*CW*, June 2, '56, p. 39) was an outgrowth of its studies in that field. In fact, one of the key ingredients of the system is 2-hydroxy, 4-methoxy-benzophenone (*CW Technology Newsletter*, April 6), purchased from commercial suppliers.

Monsanto makes it clear that its interest in this field is twofold: to broaden the market for plastics and plasticizers and to develop formulation data that can be offered as a customer service. It rates the problem of building outdoor stability into plastics as comparable in importance to the problem of corrosion resistance

in the ferrous metals field.

Recent Australian patent application (20,166/56) points up Dow's interest in the field. It covers a polybenzoyl resorcinol compound or a chlorinated polybenzoyl resorcinol compound (or any mixture thereof) for the ultraviolet absorption.

Harshaw Chemical has done a lot of work on vinyl stabilizers and is continuing this research. But it is interested in cadmium, barium, zinc and calcium combined with various fatty acids and organic modifiers such as phosphites.

Mostly Theory: There are, of course, many compounds that will absorb ultraviolet rays. The trick has been to find one that is stable to heat and light.

No one is quite certain of the mechanism by which the substituted benzophenones work. But Antara's George M. Gantz and W. G. Sumner have theorized* that ultraviolet rad-

*In the *Textile Research Journal*, March, '57, p. 244.

iation raises the molecules to a higher electronic energy level. This is then converted internally to higher vibrational levels. That causes more collisions and the energy is finally dissipated as heat.

Similarly, no one is quite sure just why the particular structure works. But Gantz and Sumner postulate that it may be because of conjugate chelation between the ortho-hydroxy and the carbonyl groups.

Not All Solved: Even though some of the compounds look promising for a number of applications, there are still a number of problems that must be solved. For instance, it has so far been impracticable to use them on textiles—because of poor fastness to washing and dry cleaning.

Fairly high cost is another reason why the new uv. absorbers may be somewhat slow to find uses. In lots of 50 lbs. or more, UV Absorber 9 sells for \$5.25/lb. The Uvinuls cost \$5.9/lb. But, these prices are expected to drop as larger-scale production is attained.

At Antara, the fate of the Uvinuls has been guided by Gantz, section manager (technical department); C. E. Stevens, manager (sales promotion and development); Jesse Werner, director



ANTARA'S TEAM:* For ultraviolet, new antagonists.

of commercial development, and C. M. Knowles, manager (technical department).

In combination with color-stable lacquers, the new compounds protect furniture woods that either bleach or

darken after exposure to sunlight. Other possible uses include food packaging, transparent wrappers for colored materials, sunburn preventatives, cosmetics, waxes and polishes for light-colored finishes, prevention of yellowing by paper, etc.

Spearheading Cyanamid's UV Absorber 9 development are James Affleck, new product development department manager; J. Arndt Weicksel, uv. absorbers product service manager; and Borden Putnam, Jr., market development manager. They are enthusiastic over light stability imparted to methacrylate polymers, polyester resins, styrene polymers, and vinyl plastics by the new product. Sample result: in outdoor exposure tests at Cyanamid's Stamford Laboratories, the visible color and appearance of clear polyester castings containing UV Absorber 9 haven't been affected after more than 18 months. (Tests are continuing.) Unprotected controls yellow markedly in a month.

Chemical neophytes though they are, the ultraviolet absorbers have a commercial future. Just how big is anybody's guess.



CYANAMID'S TEAM:† In plastics, no need for yellowing.

*Gantz, Stevens, Werner, Knowles.
†Affleck, Weicksel, Putnam.

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RESEARCH



U. of CAL.'s SEABORG: For finding new elements, more chance of success.

New Look in High-Energy Radiation

A **brand-new type** of particle accelerator is getting its warm-up this week at the University of California Radiation Laboratory (Berkeley). Nicknamed the Hilac, it's the world's first heavy-ion linear accelerator. And it's designed to help researchers turn up new elements, isotopes and fission products, probe radiation fundamentals.

It's far too early to predict commercial results from such a machine. But chemical process firms that have a stake in radiation as a potential tool in their trade will inevitably benefit from the basic findings that Hilac can help unfold.

The \$1.6-million machine (*CW Technology Newsletter*, April 27) will enable Nobel prize winner Glenn Seaborg and his colleagues at the laboratory to bombard atomic nuclei with heavy, high-energy ions of such elements as argon and neon. Energies up to 10 mev. per nucleon (the essential constituent of nuclei) and ultimately up to 400 mev. with argon will be at their disposal for the first time.

Until now, researchers have been limited to relatively light particles such as electrons, protons and deuterons in their choice of ammunition for radiation guns. While cyclotrons can accelerate heavy ions in circular paths, the

energy distribution among the ions is too broad and the beam current too low for quantitative work of the kind Seaborg plans. The 150-ft. Hilac, on the other hand, produces high-intensity, discrete-energy beams of heavy particles. In other words, while cyclotrons provide relatively few particles covering a broad range of energies, the Hilac provides a large number within a narrow (essentially discrete) range.

Linear accelerators themselves are no novelty as devices for accelerating light particles. In the San Francisco Bay area alone, the radiation laboratory has had a 32-mev. proton accelerator in use at Berkeley since 1947; it has also operated a high-beam, low-energy (7.5 mev.) deuteron accelerator at nearby Livermore since Dec. '55. Stanford University has had a 700-mev. electron accelerator in use since 1952, and just recently revealed plans to construct a 2-mile tunnel through the Stanford foothills to house a giant 10-bev. model.

Nor are linear accelerators limited to high-energy research applications; low-energy models are finding use and looking for new applications in industry (*CW*, Dec. 3, '55, p. 58; March 16, p. 123).

Like other accelerators, the Hilac is a relatively simple machine. It has four main parts: (1) an injector (a 500-kv. Cookroft-Walton accelerator); (2) a prestripper (where the ions will be accelerated linearly to 1 mev. per nucleon); (3) a stripper (where mercury vapor will remove some of the remaining orbital electrons); (4) a poststripper (where, in 90 ft., the ions will be accelerated to maximum energy).

Hilac was designed jointly by the University of California, Yale University and the Atomic Energy Commission (which footed the bill). A second model is being built at Yale.

Seaborg and his associates foresee five major fields of investigation based on the Hilac, supplementing heavy-ion investigations being done with various cyclotrons. These are: (1) production of new transuranium elements; (2) production of new short-lived isotopes throughout the periodic table; (3) production of new nuclear reactions; (4) study of coulomb excitation between heavy ions and various nuclei (essentially "nuclear spectroscopy," in which ions with energies just below the critical energy

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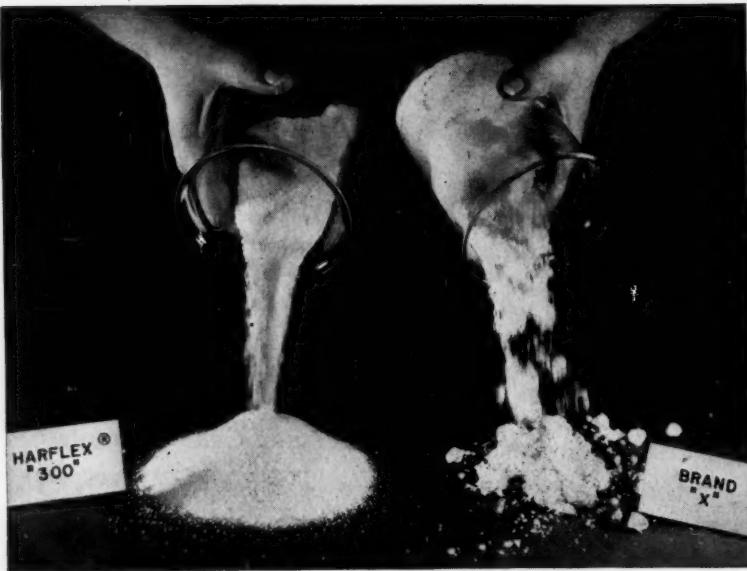
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Anhydrous
Hydrofluoric Acid
Aqueous
Hydrofluosilicic Acid
Lead Fluoborate
Metallic Fluoborates
Potassium Bifluoride
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Zinc Fluoride





HARFLEX® 300 PERMITS A FREE FLOWING DRY BLEND

In a typical test, 64 parts of HARFLEX® 300, preheated to 212° F, were mixed with 100 parts of an easy-processing polyvinyl chloride resin at 212° F. After 30 minutes of thorough agitation, a dry, free flowing powder was obtained which could be put directly into an extruder. When a free flowing dry blend is used directly, as in extrusion operations, it is possible to eliminate or minimize extra operations such as Banbury mixing or roll milling.

HARFLEX® 300 is a permanent polymeric plasticizer, readily adaptable to dry blending. Write for our free technical bulletin that gives full information about HARFLEX® 300. Samples for your test or experimental work are also available at your request.

RESEARCH

barrier excite the nuclei); (5) study of range-energy curves of heavy ions and their adsorption in matter (of particular help in interpreting cosmic-ray data).

Eventual production of new elements such as 102 (eka-ytterbium), 103 (eka-lutetium, which will complete the actinide series), 104 (eka-hafnium) and 105 (eka-tantalum) is almost a certainty. Until now, the problem in producing these new elements has been to overcome the block in the progression imposed by the extremely short-lived elements beyond curium (particularly the even-even isotopes—those with even atomic weight and even atomic number). By providing heavy particles, the Hilac will permit researchers to make a bigger transmutation jump. They can, therefore, start with relatively plentiful elements such as uranium, plutonium or curium.

These new elements, however, won't be produced immediately. Moreover, other investigations with the Hilac may prove more valuable. Further elucidation of cosmic-ray behavior and/or the structure of the nucleus (energy levels, rates of decay of excited states back to the ground state, etc.) will have an important impact on basic and applied research. And new reactions (e.g., between neon and uranium) offer wide possibilities.

REPORTS

These new reports are available from the U.S. Dept. of Commerce, Office of Technical Services (Washington 25, D.C.):

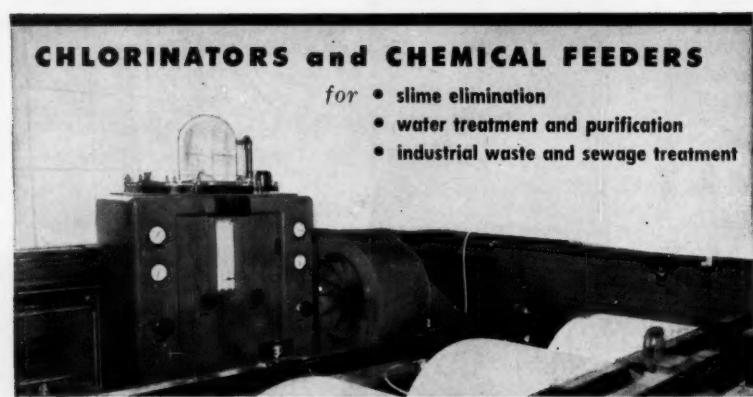
- Research on ceramic and silicone resin compositions as metal-to-metal structural adhesives in high-temperature areas of aircraft is reported in "Research on Elevated-Temperature-Resistant Ceramic Structural Adhesives" (PB 121659, \$2.50), and "Investigation and Development of High-Temperature Structural Adhesives" (PB 121657, \$2).

- New Air Force-sponsored titanium research is covered in "Electro-deposition of Titanium: Part 3" (PB 121721, 50¢); "Investigation of Stress Relief Procedures for Titanium and Titanium Alloys" (PB 121570, \$2.25); and "Stability of Commercial Alpha-Beta Titanium Alloys" (PB 121655, \$1).

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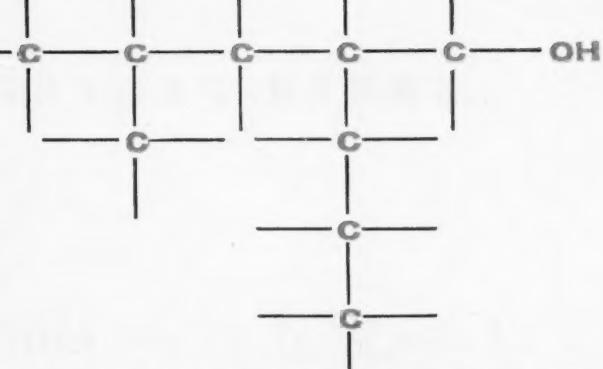
WALLACE & TIERNAN INCORPORATED
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Eastman

announces
commercial
production

of

NONYL



ALCOHOL

2 propyl, 4 methyl pentanol

Eastman nonyl alcohol is the only 9-carbon alcohol presently produced in quantity in this country. Its low color (less than 10 APHA) and excellent purity meet the high standards that typify Eastman industrial chemicals.

Nonyl alcohol is a primary aliphatic alcohol whose reactions are characteristic of this class of compounds. The uniformity and ready availability of Eastman nonyl alcohol make it an attractive raw material for the manufacture of plasticizers and other esters. For example, the nonyl esters of dibasic acids such as phthalic, azelaic and adipic are of particular interest as plasticizers for vinyl plastics, plastisols and protective coatings. In most cases no changes are required in conventional esterification equipment or processes for the preparation of these esters. Little color develops during the esterification reaction.

Dinonyl phthalate, a plasticizer promising equivalent or better performance than the widely-used dioctyl phthalate (DOP), has already been placed on the market.

If you are interested in investigating and evaluating nonyl alcohol, write for more information and working samples. EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE.

Specifications and Properties

Specific Gravity, 20°/20° C 0.826-0.830

Boiling Range, 760 mm.

Initial Boiling Point 190.0° C. minimum

Dry Point 200.0° C. maximum

Color, APHA 10 ppm maximum

Aldehydes, as Nonanal 0.70% by wt., maximum

Acidity, as Acetic Acid 0.10% by wt., maximum

Unsaturation, as Nonenal 0.20% by wt., maximum

Sulfuric Acid Reflux Color, APHA 100 ppm maximum

Phthalate Ester Color, APHA 100 ppm maximum

Eastman

CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE

subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; New York City; Framingham, Massachusetts; Cincinnati; Cleveland; Chicago; St. Louis; Houston. **West Coast:** Wilson Meyer Co., San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

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As Spencer points out in their letter opposite, any chemicals they use must meet rigid standards and because they are in a competitive field, they must buy from economical producers. To quote, “We depend on J. T. Baker for one important material purchased in truckloads and in tank cars. I am glad to say that every shipment we have received over these many years has met our exacting specifications.”

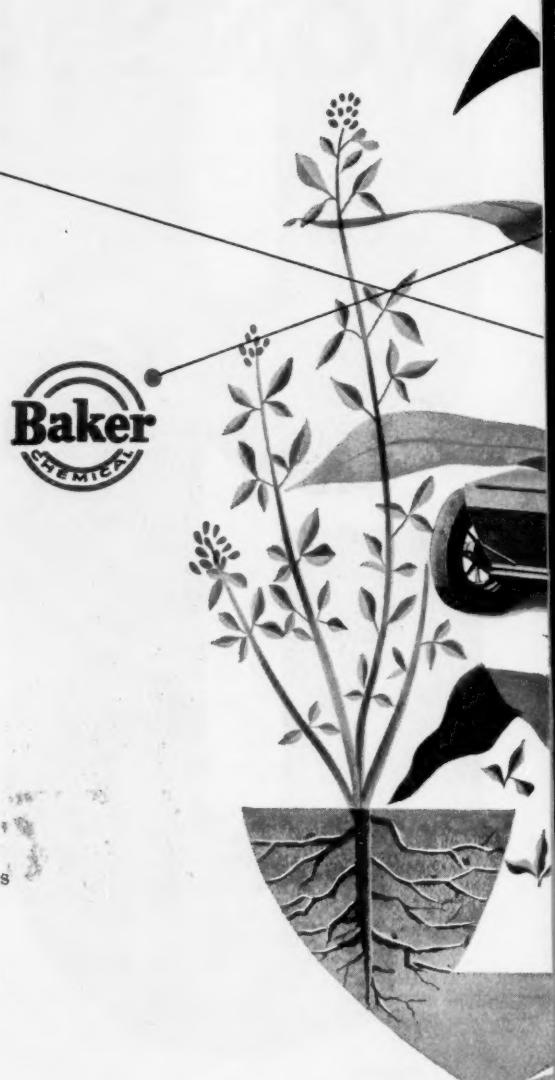
The words to remember are *tank cars* and *exacting specifications*.

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Baker can do this for you—at competitive prices.

Baker *Purity by the Ton* may help you achieve faster, more trouble-free processing... save you man-hours in your laboratories... up-grade your product... reduce your costs.

May we quote on your requirements? We would welcome the opportunity for Baker Processing Chemicals to become one of the guardians of *your* precious trademark.



PURITY BY THE TON - FOR

... one of the guardians of this precious trademark



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November 2, 1956

L. D. JONES
DIRECTOR OF PURCHASING
Mr. D. H. Coale
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435 North Michigan Avenue
Chicago 11, Illinois

Dear Mr. Coale:

We get a very real satisfaction from our basic job of contributing to soil fertility and productivity. Our trade names in this field are increasingly important to farmers in 25 states.

Our manufacturing operations are precise, and any chemicals we use must meet rigid standards. Yet ours is a competitive field - we watch our purchase prices closely - and we buy from economical producers.

We depend on J. T. Baker for one important material purchased in truckloads and in tank cars. I'm glad to say that every shipment we have received over these many years has met our exacting specifications. Moreover, the deliveries were on time, and our personal contacts with Baker sales and technical people have been most pleasant.

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Most sincerely yours,


LOYD D. JONES
Director of Purchasing

LDJ:kf

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Phillipsburg, New Jersey

FC PRODUCTION USE

PRODUCTION



1 Bag-size primary crusher eliminates skinning of heat-hardened shellac tombstones.



2 Pumping of ground shellac slurry replaces manual charging of material to bleach batches.

Revamped Process Grooms Shellac

A key ingredient of such new specialty products as self-polishing floor waxes (*CW*, Nov. 3, '56, p. 92), flexographic printing inks and special leather finishes, shellac is taking on all the earmarks of a chemical raw material. To shellac producers, this means closer control of product quality and physical characteristics to meet exacting specialty specifications. To shellac-making Mantrose Corp. (Brooklyn, N.Y.), it has meant a complete revamping of processing operations. The company's streamlined new process is a substantial advance in shellac production.

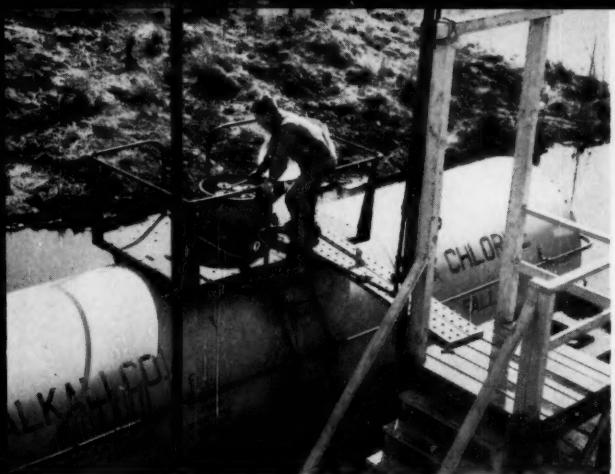
The revamp started when Mantrose took over an existing plant at Attleboro, Mass., to expand production facilities. The goal: complete restyling of material handling procedures with equipment tailored to shellac's requirements. Here's how the new plant refines shellac while safeguarding its chemical properties:

Beating the Heat: A guiding consideration throughout the shellac process is temperature control. Ex-

hibiting both thermoplastic and thermosetting properties, the material is sensitive to heat at all stages of processing. And problems caused by overheating are encountered right at the start with incoming raw material at Attleboro.

Normally, the shellac is received from India as a flake or seed in 164-lb. (2 maunds, Indian weight) burlap bags. But material shipped during the hot summer months often fuses into solid "tombstones" that formerly had to be cut out of the bags and broken with a sledge hammer. To save time in the new plant, tombstones to which the bags adhere too tightly for easy skinning can be fed—bag and all—to the primary crushing equipment.

Perhaps the greatest single labor-saver at Attleboro is the slurry system of charging ground shellac to batch dissolving tanks. Under the old method, each 1-ton batch was carried from the crusher to the batch makeup tank in bags. Under the new system,



3 Chlorine tank car replaces 1-ton cylinders, simplifies makeup of hypochlorite used in . . .



4 Bleaching vats that upgrade dissolved shellac by conventional day-long treatment.



5 Filtration strips wax from refined grade. Clarity measures efficiency of purification.

for New Jobs

shellac from secondary crushers is slurried in four sump tanks from which it can be pumped to the processing line.

No Shortcut: In the actual chemical upgrading of shellac, there's no way to shorten the time-honored bleaching process. The material still must be cooked for several hours to dissolve it in weak alkaline solution from which the impurities can be removed by settling. And the bleaching of dissolved shellac with sodium hypochlorite is still a 24-hour operation. But to minimize handling and provide close chemical control, these operations, too, have been streamlined wherever possible.

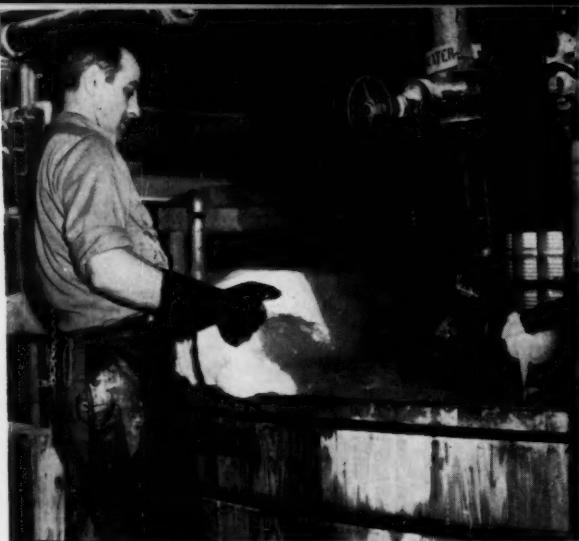
In making bleach solution, for example, Mantrose eliminated the handling of 1-ton chlorine cylinders, now ties a tank car directly into its bleach makeup tank, where the chlorine is metered into a solution of caustic soda. And in the bleaching operation itself, concentration, temperature and rate of addition of the



6 Wax recovered as by-product of refined shellac is floated off the sludge from filter presses.



7 Workers form sticky curd of precipitated shellac into pancake by age-old paddling technique.



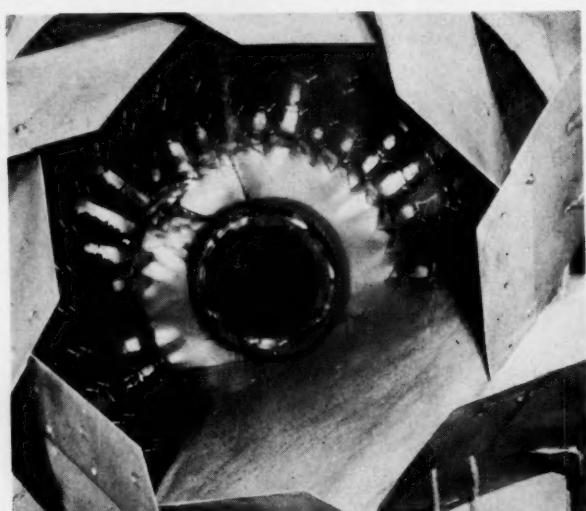
8 Pancake is cut, washed, dried, then . . .



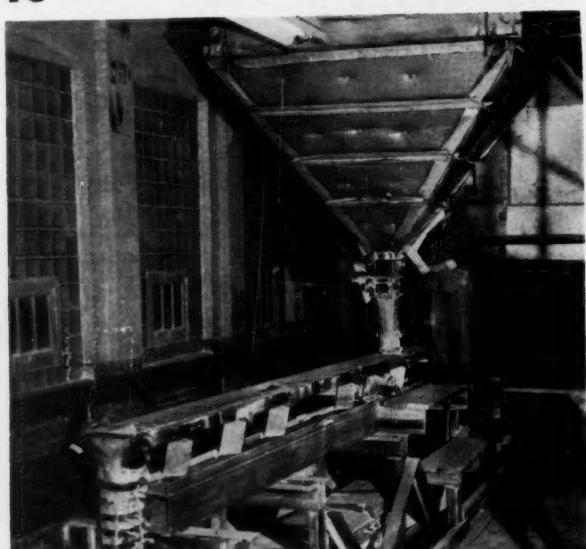
9 Ground and fed into rotary dryer.



10 Automatic controls regulate drying air.



11 Rotary unit replaces vacuum dryer.



12 Conveyor cools shellac, sends it to . . .



13 Bag packager and refrigerated storage.

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substantial new basic production
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National **NAXOL**^{*}
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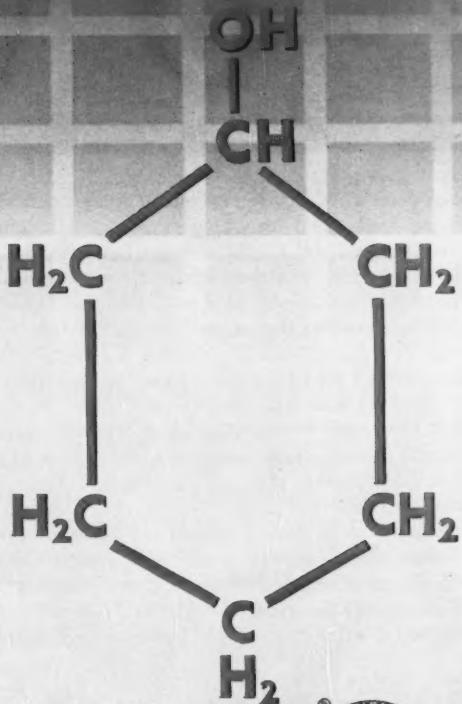
Our output is substantial, completely competitive in every respect and can be quickly expanded to meet any foreseeable demand.

Two types immediately available: NAXOL (100% material) and NAXOL D (protected against freezing).

We invite inquiries from present and prospective users of either grade and will be pleased to send working samples, price quotations and delivery on C/L and LCL quantities.

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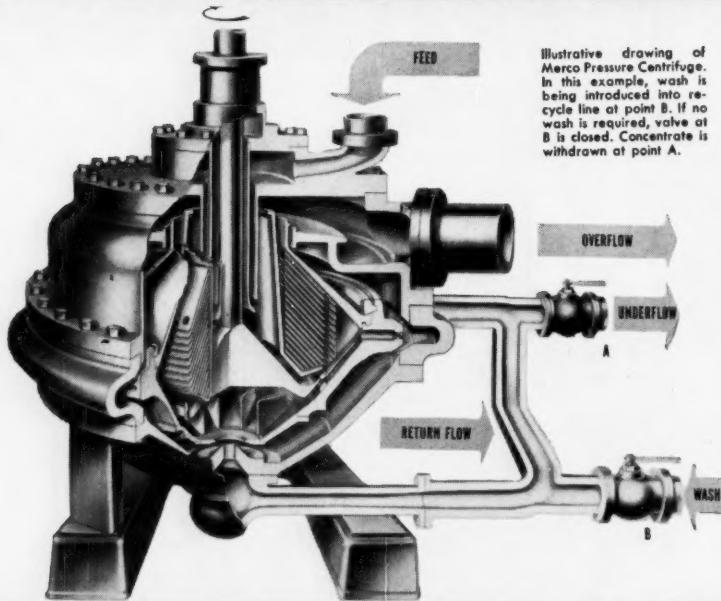
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Illustrative drawing of
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In this example, wash is
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recycle line at point B. If no
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B is closed. Concentrate is
withdrawn at point A.

Newest development in wet processing equipment, the Merco Pressure Centrifuge is designed for all continuous centrifuging applications at pressures up to 110 psi. Key to pressure operation is a specially designed housing closure that has been exhaustively tested at pressures two to three times the guaranteed figure of 110 psi. Equally important, this new unit incorporates the unique Merco "Return Flow" principle for maximum operating flexibility. Under centrifugal forces thousands of times higher than gravity, even the smallest particles in the feed "sink" rapidly outward and are continuously expelled through fixed open nozzles in the rotor. A controlled portion is withdrawn as finished concentrate and the remainder becomes a return flow to the rotor. Wash, if desired, is introduced to the return flow line . . . clear, excess liquor overflows out the top of the unit.

If there's a step in your flowsheet involving concentration, washing, clarification, soluble recovery, or classification *under pressure*, there is a good chance that this new tool will prove useful. Bulletin No. 2600, just off the press, describes the Merco Pressure Centrifuge in detail. For your copy, write Dorr-Oliver Incorporated, Stamford, Conn.

Merco T.M. Reg. U. S. Pat. Off.



PRODUCTION

bleach are carefully checked to regulate the process.

After bleaching, shellac solution is pumped to precipitation tanks for recovery of bone-dry shellac (containing wax), or to filters for removal of wax from refined-grade product. In the latter case, filtered sludge is run off into settling tanks for recovery of shellac wax (sold as a substitute for carnauba); dewaxed solution goes to precipitators.

Art Prevails: One operation that retains the flavor of a classic technique is the handling of the precipitated shellac. Dropped out of solution by dilute sulfuric acid, it's brought to the surface of the tank in curds by heating and agitation. To consolidate it into a mass that can be easily handled, workers spin the floating mass with paddles, work it into a cohesive "pancake." When all of the shellac in a batch has been precipitated, the pancake is cut apart, washed with water and allowed to harden.

In contrast with the manual handling of the pancake, the final drying of the refined shellac is probably the most radical of the new plant's departures from conventional practice. In the old plant, the washed pancake was centrifuged to remove surface water, then loaded into stainless steel pans for vacuum drying to eliminate contained water. Handling involved loading and unloading about 1,400 pans twice every 24 hours.

At Attleboro, drying is completely automatic. The chunks of hardened pancake are ground in a hammer mill, fed into a rotary dryer through which conditioned air is circulated. Product is carried from the dryer to packaging by a vibrating conveyor that is refrigerated to provide required cooling of the shellac. From there, the material goes to a bagging machine for packaging, and to refrigerated storage.

Complementing Synthetics: The shift in shellac's end-use pattern reflects not only its growing application in specialty products but also its compatibility with the fast-growing synthetics. In floor waxes, for example, shellac adds gloss, scuff resistance to the synthetics' water resistance, ease of removability. And with the upgrading of shellac to rigid chemical standards, producers such as Mantrose are seeking to add new uses for which the natural product is a natural.



something new on the old red barn

Actually this is not an *old* red barn in any sense. It is a modern aluminum farm building. And the farmer who wants to paint aluminum—red or any color—can do so most effectively and easily when he first applies a wash primer based on Shawinigan's FORMVAR or BUTVAR.

A wash primer based on FORMVAR or BUTVAR adheres firmly to aluminum, applies easily and dries quickly. It provides an excellent foundation for paint systems and effectively prevents corrosion. Only 0.3 to 0.8 mils thick, the wash primer film is equally effective as a conditioner and paint base for tin and galvanized iron. Formulation of a FORMVAR or

BUTVAR based wash primer is simple in a regular ball or pebble mill.

Wash primers have extended the life of metals in many applications and have opened profitable new markets for paint manufacturers. For full technical information and suggested formulations, write Shawinigan Resins Corporation, Department 1118, Springfield 1, Massachusetts.

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SPECIALTIES



ROAD WORK will, by 1960, take 106 million bbls. of asphalt a year. And specialty additives will be . . .

Riding the Asphalt Road to Riches

Under the impetus of the \$50-billion, 10-year federal highway construction program, consumption of asphalt in paving will increase to 106 million bbls. by 1960, estimates McGraw-Hill's Petroleum Processing magazine. It's little wonder, therefore, that the still-small asphalt antistrip additives business, which stands to take a long ride—possibly up to \$40 million/year—on the asphalt boom, is now in some turmoil.

Manufacture of these additives, which enable asphalt to stick to cold and damp aggregate (gravel, crushed stone, etc.) and help the finished asphalt road to resist deterioration by moisture, now chalk up total annual sales of only a little more than \$1 million. Expectations, however, are that in the coming decade the additives business will grow at a faster rate than the asphalt industry, because the chemicals will be going into a greater and greater percentage of asphalt pavings. But added to the usual growing pains will be several complications.

Patent Hassle: Immediately, there are patent battles. Nostrip (Jamaica, N.Y.), a small offshoot of giant Ma-

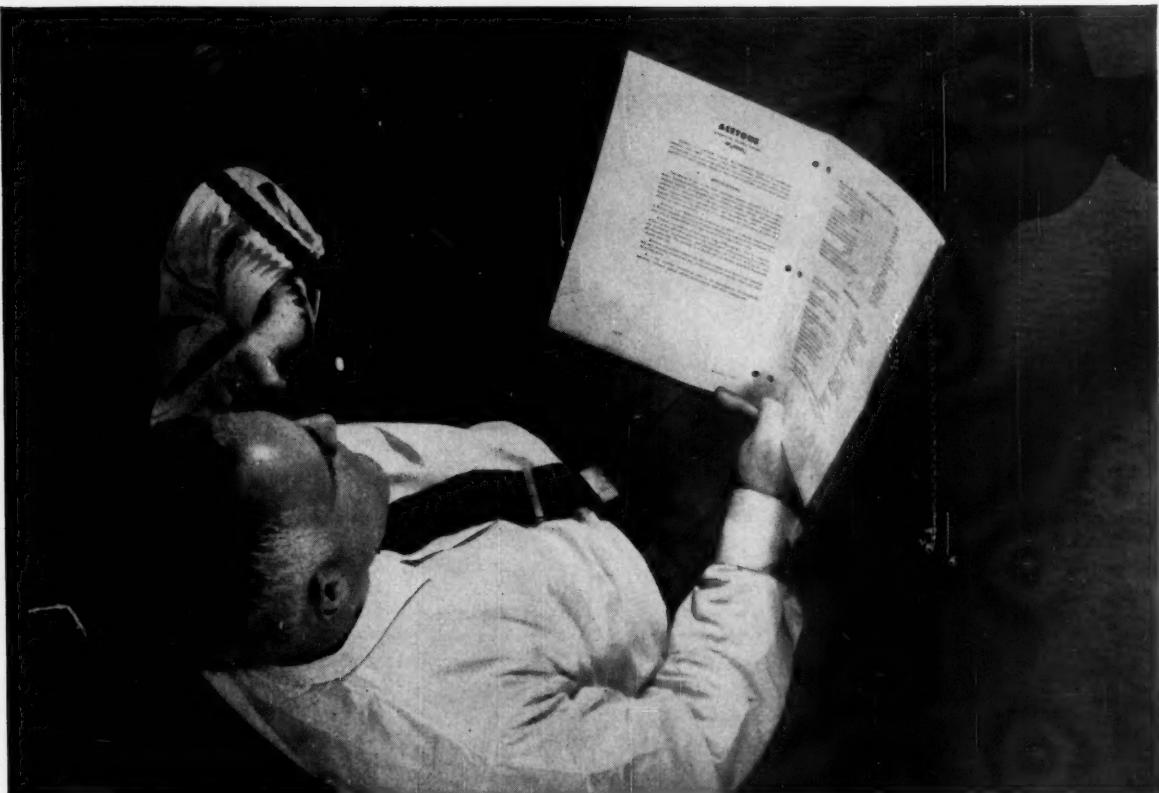
guire Industries, Inc. (electronics, sub-machine guns, dentist chairs, oil exploration), is probably the largest producer of the additives, and it holds the basic patent—the Johnson patent, issued in 1947 (U.S. 2,426,220). This patent describes the addition of an amido soap of a higher fatty acid to asphalt to increase the adhesion between asphalt and common mineral aggregates. The additive is particularly useful when the aggregate is damp, which ordinarily makes the required adhesion almost impossible to achieve.

At present, Nostrip has licensed only two of the dozen or so companies making the additives. Under license are Lancaster Chemical Corp. (Carlstadt, N.J.) and Chapman Chemical Co. (Memphis, Tenn.). Major producers not under license are Carlisle Chemical Works (Reading, O.); Armour & Co. (Chicago); Dewey & Almy Chemical Co. (Cambridge, Mass.); Kotal Co. (Summit, N.J.); Tret-O-Lite Co. (Webster Groves, Mo.); Trumbull Asphalt Co. (Summit, Ill.); Universal Chemical Corp. (Lonsdale, R.I.); and the most recent entry, Harshaw Chemical Co. (Cleveland).

Nostrip doesn't consider all of these firms to be infringers of its patent—some are making amido amines (not soaps) or an imidazoline—but it thinks that most are infringing. Nostrip is currently suing Empire Petroleum Co. (Denver), naming Carlisle Chemical as a codefendant (since the patent covers only use in asphalt, suits must be against the party that mixes the additive into the asphalt—usually a petroleum company—rather than the additive maker).

For Troubled Oil? An even bigger fight is brewing in convincing the oil industry of the value of additives. Although petroleum people accept the value of the additives in cutback (i.e., asphalt diluted with kerosene or another solvent, used primarily in repair work), they are skeptical of additives in hot mix (i.e., full-strength asphalt kept fluid with heat and used in original construction of highways).

Some 80% of the additives sold are now used (at a 1¢/asphalt gal. cost) in cutback, which is usually mixed with cold, damp aggregate. But many in the industry think that the greatest potential lies in providing additives for hot mix—the material to be used in



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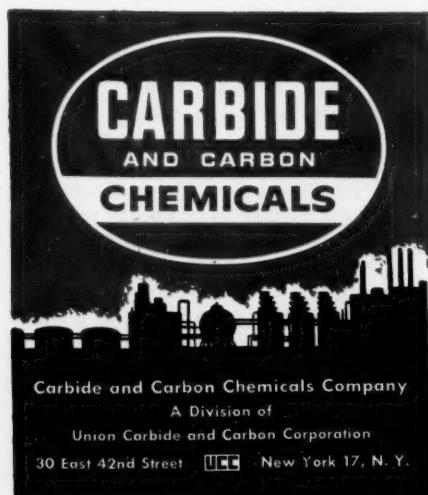
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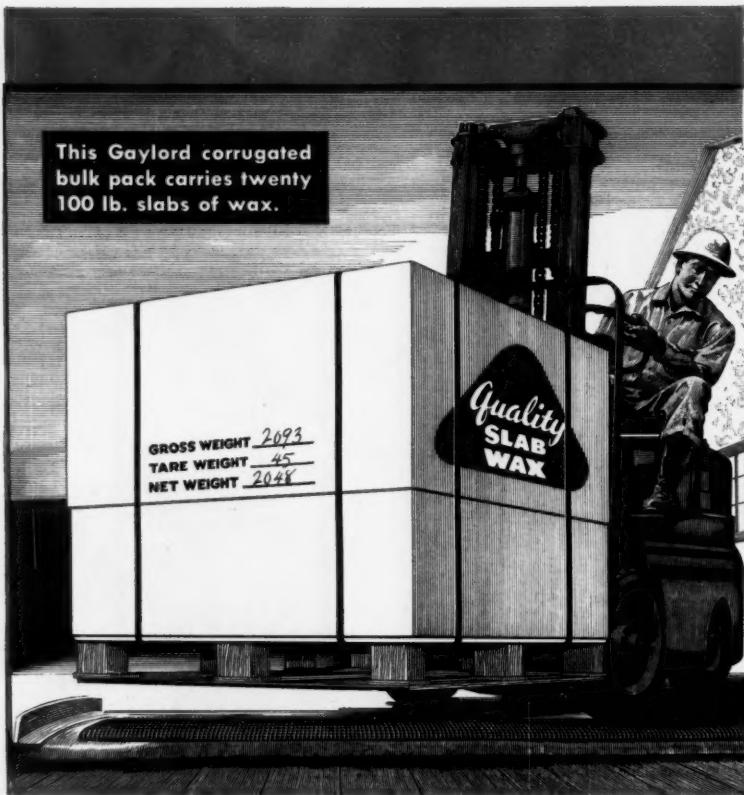
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SPECIALTIES

about 65% of the federal road building program.

Qualifying the additives for this market is the development of heat-stable products that can stand the 300-400 F temperatures encountered in the hot mixes. Carlisle Chemical has a patent (U.S. 2,663,648) covering one type of such material: dimethyl amino-propylamine. Nostrip disputes Carlisle's right to manufacture under this patent, however, claiming that such products still fall under its Johnson patent. Others make heat-stable materials of a type not covered by the Jelling (Carlisle) patent, using ethylene amines. Carlisle contends that most additives break down in hot mix by reacting chemically with the asphalt, rather than simply by the action of heat. The company says the Jelling patent is the only one that solves this problem. (Cost of using additives in hot mix is about a half-cent/asphalt gal.)

Point of Resistance: The oil companies' resistance is at the sales level. About half the total amount of additives produced are sold to the oil companies that make asphalt; the other half is sold to contractors and state highway departments. But the impetus behind each sale (except to an occasional contractor who figures he can save money with the additive by avoiding bad-weather down-time) comes from state-set specifications. The oil companies, through their Asphalt Institute, contend that the tests by which the additive makers convince the state agencies are far from scientific.

The additive makers themselves are not satisfied with the tests, and are working with the American Society for Testing Materials to develop one test that could be standardized.

Many additive makers, however, believe the oil companies' resistance lies much deeper than skepticism over testing procedures. They contend that the refiners simply want to avoid the extra expense and bother of mixing in the stuff. More important, additive makers say, oil companies see the use of additives as leading toward a standardized asphalt. And that is a threat to the petroleum firms because, should users find standard asphalt within their reach and begin to demand it, it could mean a disruption of current refining procedures. Now, asphalt is simply a refinery leftover—it's not a uniform product.



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McKELLAR: Explains business-as-usual status of government paint plants.

Defense for Navy Paint

The Senate Small Business Subcommittee on relations of business with government held a one-day hearing last week to get a progress report on what the Eisenhower Administration has been doing to eliminate government competition with private enterprise. Prime target: the Navy's paint-producing plants. Latest word: a decision is "near" on whether to close the plants.

The Navy's manufacture of half its paint requirements has been hashed over many times in the past. Each time, the argument ends with what looks like agreement that if paint can be procured from private enterprise, it should be. But then the Navy continues producing paint.

Addressing the subcommittee, Joseph McEllar, director for small business of the Defense Dept.'s Office of Supply and Logistics, said a decision on whether to close the Navy paint plants is due very soon. Substituting for his bedridden* boss, Assistant Secretary of Defense Perkins McGuire, McEllar told the subcommittee

that the Defense Dept. thinks the Navy plants should be "discontinued if possible."

McEllar said that a review of all plants under the Defense Dept.'s authority is scheduled for completion by June 30. As soon as possible after that, McGuire will make the final decision on the fate of the Navy paint plants.

Presenting the Navy's position on the controversy, Rear Admiral Schuyler N. Pyne, assistant chief of the Bureau of Ships, said the Navy would willingly "curtail its paint production if we could get these three things from private enterprise—high-quality paint, at certain times, in certain quantities. It's these three things we have had trouble with in the past in dealing with private companies."

Denying industry criticism that the Navy seems to be expanding rather than curtailing its paint operations, Admiral Pyne nevertheless admitted that the Navy's raw material ingredients, now on hand or on order, total \$8.4 million. That's enough to write three months of production orders beyond December of this year.

*With pneumonia.

P&G to Buy Clorox?

Procter & Gamble last week moved to strengthen its position as a supplier of household laundry products by proposing to purchase Clorox Chemical Co. (Oakland, Calif.). The deal, soon to be voted on by P&G's board and Clorox stockholders, would bring one of the nation's largest makers of household bleaches to P&G with the exchange of 8½ shares of P&G common stock for 10 shares of Clorox.

The purchase could be particularly significant to the bleach field. Like many bleachmakers, Clorox has been facing the decision of whether to add heavy-duty dry bleach (distinguished from light-duty, "perborate" products) to its stand-by, Clorox liquid bleach.

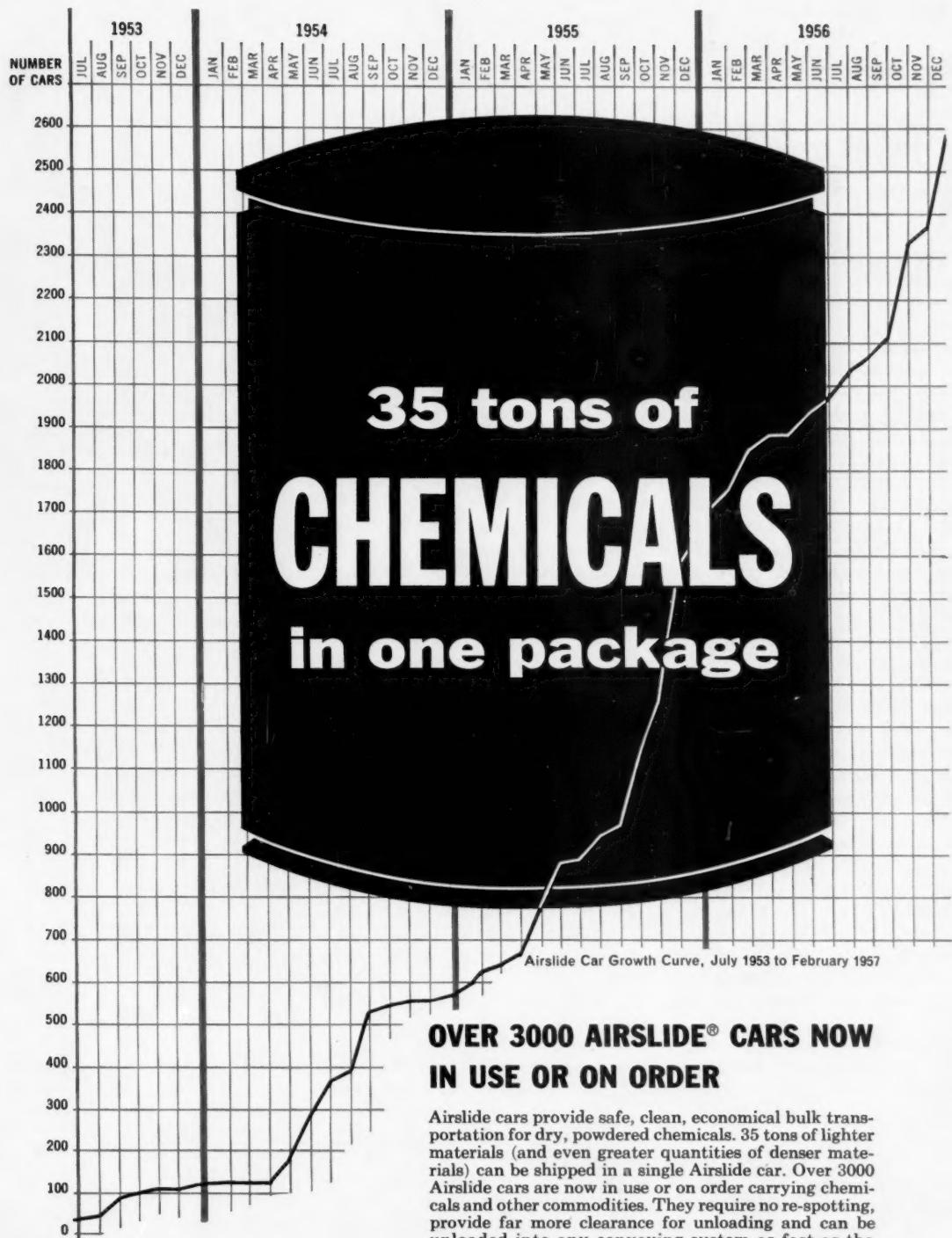
Purex,* Clorox's largest competitor on a national scale, introduced its heavy-duty, dry Beads 'o Bleach nationally last spring; Clorox has not yet made a similar move, although there has been some trade talk of it.

P&G's latest move would also put it in competition with Colgate (see also p. 26) in a new area. Colgate edged into the dry bleach business some three years ago with the introduction of a heavy-duty dry bleach called Pruf. Pruf was never put into national distribution, although it appeared to be well received in test markets. (P&G once offered in one city a dry material called Starbright.)

Whether Clorox, under the P&G wing, would go ahead with the long-rumored dry product has not been revealed. P&G says no big changes for the firm are contemplated—Clorox would keep its Oakland headquarters and its present distribution setup, and would be operated as an independent subsidiary.

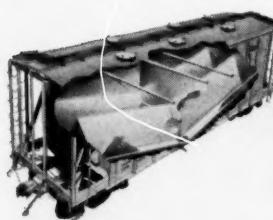
The proposed Clorox purchase is the latest in a series of moves by P&G to expand its line of consumer products. But it is the first in the line of new chemical specialties. Recent buys have included Charmin Paper Products Co. (Green Bay, Wis.), taken over in Jan. '57; and two food products makers: W. T. Young Foods, Inc. (Lexington, Ky.) and Duncan Hines Baking Mix division of Nebraska Consolidated Mills (Omaha), acquired in Aug. '55 and Aug. '56, respectively.

*Last year, in another association of soaper and bleachmaker, Purex bought Manhattan Soap Co. (New York).



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Specialties on a Shoestring

A new spot-remover slated for introduction this summer will be the fourth new chemical specialty to be marketed in less than eight months by a fast-moving Chicago firm, Mirakle Lustr Corp.

The material, which features such innovations as a novel formula that permits packaging in a squeeze bottle equipped with a nylon brush top, typifies the prolificacy of idea and product that has characterized Mirakle Lustr in its brief life span.

Driving force behind the lusty young firm is a refugee chemist, Morton Paryzer, who's built a prosperous business in less than a year.

Land of Opportunity: Paryzer came to the U.S. from Germany in 1949 with his wife, whom he had met while both were interned in Nazi concentration camps. He headed for Chicago, where he found a daytime job as inspector in a mattress factory—a job at which he worked until 1955.

In the evenings, Paryzer formulated, bottled and sold a furniture polish—mainly to retailers in the Chicago area. The rights to a variation of this material were sold to Procter & Gamble (CW, Nov. 5, '55, p. 62). The consideration he received for the formula, as well as some other savings, were invested in Lustr-Glo Inc. (Chicago), which he joined as a partner in 1955. In spite of the firm's moderate success, things didn't work out, and after about a year Paryzer finally went into business for himself.

Surprise Compensation: Helping to make this move possible was surprise compensation from the German government for the years he and his wife had spent in the concentration camps. The \$2,200 each got for this, added to personal savings, brought starting capital to \$7,000, and with this Paryzer launched Mirakle Lustr in Nov. '56, in a small store on Chicago's north side.

First product was an upholstery and rug cleaner. This, like subsequent products, owed its success and properties to imported emulsified solvents that Paryzer won't identify. Among the properties claimed for this cleaner: low toxicity, no fire hazard, safety of use on almost all fabrics. More-

over, Paryzer says, the product will remove everything from ink stains to shoe polish.

Second product, launched in Jan. '57, was a furniture polish, said to remove perfume and paint stains without damaging the finish, and to be resistant to fingerprints.

Last month, a third product, a car upholstery cleaner, was introduced. Similar in application and effectiveness to the older rug and upholstery cleaner, it sells for \$1.98/quart, which is diluted to make over a gallon of use-strength solution.

Squeeze Products: Next up will be the spot-remover scheduled for summer introduction. It will sell for 59¢ a bottle, be promoted on its "leaves no ring" properties.

This will be followed by a new auto wax, also packed in a squeeze bottle. The wax is ready to go now, will be added to the firm's line just as soon as Paryzer has enough funds to launch it properly.

Local No Longer: Right now the Mirakle Lustr line is distributed only in Chicago and Milwaukee (though limited mail order sales are accepted). But Paryzer has plans to go national in about six months. Though he's had offers from distributors in Detroit, Cleveland and New York, he is deferring increased distribution until he can move to larger quarters, and increase his capacity. Things are getting crowded now in the north-side store, but Paryzer doesn't want to move until forced to by pressure of firm orders.

Getting cash—a problem of many small specialty makers—hasn't worried Paryzer too much. He's taken an expensive way out, though. He gets most of his cash by factoring accounts receivable.

To push his products on the retail level, Paryzer relies heavily on demonstrators. These he admits are expensive—but he feels that method is fastest way to get a product launched. Six demonstrators have been on the job for six weeks with the furniture polish; sales currently hitting about 3,000 bottles/week.

In charge of training and scheduling all demonstrators is the company's first employee, Helen Yates, who began as combination bottle line



MIRAKLE LSTR'S PARYZER:
Good mileage from \$7,000 investment.

filler and demonstrator. She still works on the bottling line in emergencies.

Today, when many small specialty manufacturers start optimistically, only to become mere statistics in the business failure columns of Dun & Bradstreet, it's refreshing to find a firm that shows such strong signs of maturing into a solidly successful business.

Plastic Turnabout: Most people think of plastic as an insulator—but not two technicians at Japan's Nippon Telephone and Telegraph Public Corp. (Tokyo). After three years of work, Masao Kadonaga and Susumu Mizuno have produced a conducting plastic. To make the new material, pulverized (0.1 micron dia.) silver copper is mixed with plastic. The plastic can be made in stiff or soft form or even in paint form, and can be directly electroplated. According to the developers, the plastic has the same resistance as mercury at room temperature.

Cap Combination: Valve Corp. of America (Bridgeport, Conn.) has developed an aerosol dispensing unit that combines the valve and cap, eliminating the need for a removable protective cover. The new dispenser is called Mist-Top.



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Technology Newsletter

CHEMICAL WEEK
May 4, 1957

A new zirconium purification plant will be built by the Wah Chang Corp. at Albany, Ore.—the site of the Bureau of Mines pilot plant that the firm operates under lease from the government.

The new unit will supplement both the pilot plant and the new zirconium sponge fabricating unit that Wah Chang brought into operation last week. The firm's current total investment in its Oregon operations: \$2.5 million.

American Gilsonite Co. is testing its 70-mile pipeline, which will carry a slurry of gilsonite in water from a mine at Bonanza, Utah, to a plant near Grand Junction, Colo., where the material will be converted into metallurgical coke and gasoline.

To date, the test seems successful, but the firm, an affiliate of Standard Oil Co. of California and Barber Oil Corp., will make no "big announcement" until the line is put through a complete range of operating tests. The firm wishes to avoid any of the embarrassments that faced Pittsburgh-Consolidation Coal Co. when its coal pipeline plugged up.

Technological changes in Canada's first atomic power reactor will cause a delay in schedule and will hike costs somewhat. The reactor, known as the Nuclear Power Demonstrator, is to be built on the Ottawa River near Des Joachims, Que.—about 140 miles northwest of Ottawa. Originally, it was to be completed by mid-'59, but now it looks as though it will be at least a year later than that.

Originally, too, the cost was to be approximately \$14.5 million. Just how much more it will cost is not certain. The reactor, as its name implies, is intended to be used to get data on nuclear power generation and costs. It is not meant to be an economical source of electricity.

Future aircraft may get by with shorter air fields if a new porous metal sheet material developed at Armour Research Foundation of the Illinois Institute of Technology (Chicago) should prove out. The material, made by using a technique called "fiber metallurgy," is a continuous sintered sheet of felted metal fibers, can be made in a wide range of porosities, features high strength-to-porosity ratios.

The new felt has possibilities for aircraft "boundary layer" control—a method of reducing turbulence of air movements over aircraft airfoil surfaces by passing air through a layer of porous material located at points where turbulence is present. Control of turbulence permits greater lift, cuts distance requirements on take-off.

Progress in free-radical research has been posted by the University of California scientists. George C. Pimentel and associates have suc-

Technology

Newsletter

(Continued)

ceeded in using the infrared region of the spectrum in studying the radicals. Other researchers have made visible and ultraviolet studies of free radicals.

Pimentel says that although the infrared experiments are more difficult to perform, the results are more easily interpreted.

Free radicals are now taking on commercial and military importance, of course, as possible bases for rocket propulsion systems. They're also being investigated with the aim of finding out what role they play in sustenance of plant life, photosynthesis.

How soon will chemical firms get big anticancer drug contracts?

Senate hearings this week will provide a clue. There's no question that such contracts—at a \$5-10-million/year scale at the outset and involving heavier outlays later—will be approved. The only question is whether they'll start this July 1 or next year.

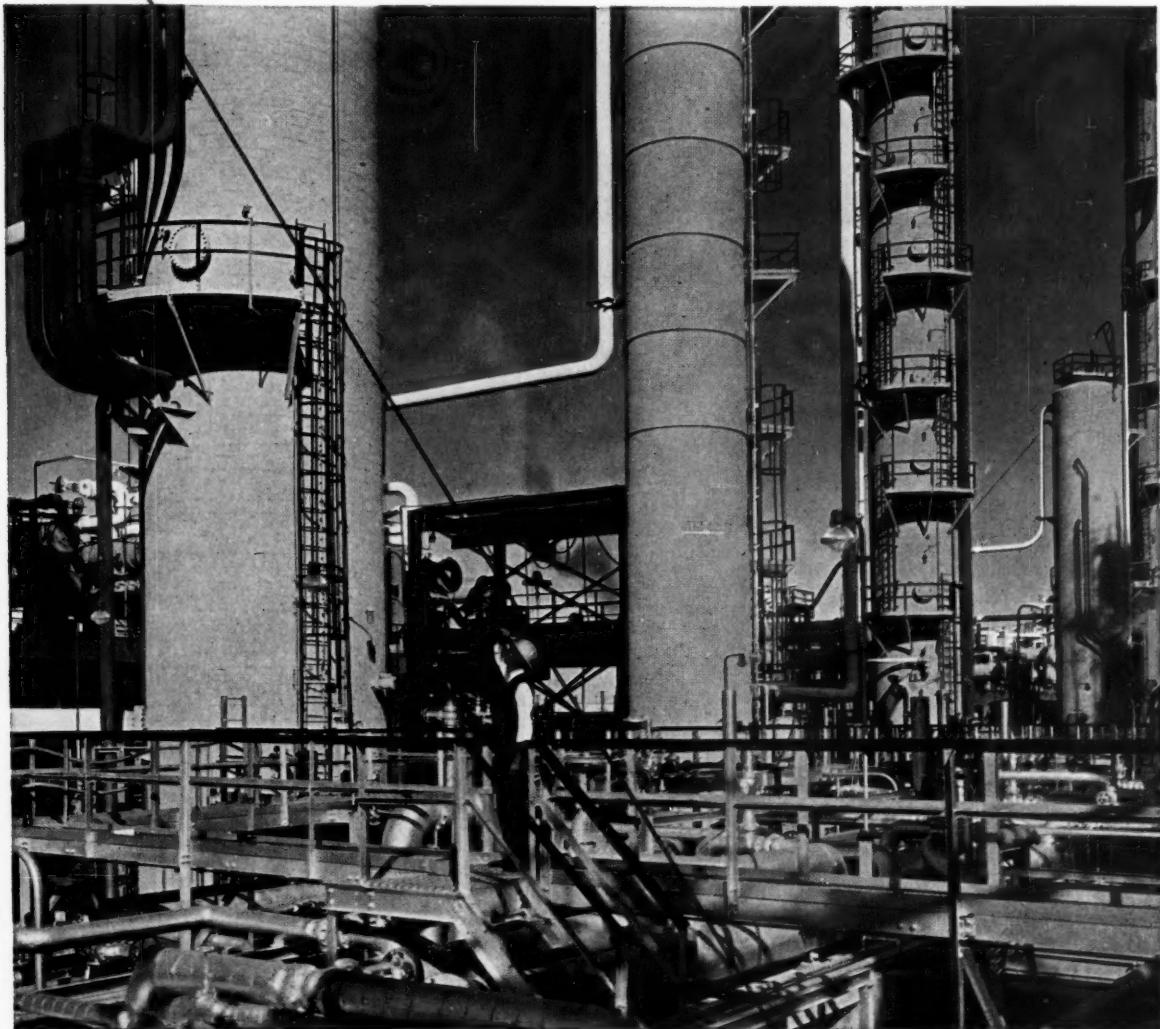
The National Cancer Institute has been pursuing chemotherapy work for some time, got into screening of chemicals and antibiotic "beers" two years ago. This year, it's testing some 40,000 such substances (provided gratis by industry) on mice. Now, the institute is ready to sign up about 10 nonprofit research institutes. A \$500,000 contract with Stanford Research Institute (Stanford, Calif.) is imminent, will be followed soon by one nearly as big with Southern Research Institute (Birmingham, Ala.). These contracts will carry the work a step farther—into synthesizing the needed quantities of the more promising compounds uncovered by the screening program. The remaining eight contracts for such synthesis work are farther away—and together won't match the \$500,000 going to Stanford.

The Netherlands will try out electrolytic membranes as a way to provide fresh water from sea water. A membrane device will be built in Scheveningen harbor by T.N.A.O., the Netherlands organization for applied scientific research. Test period will be approximately one year.

The full-scale experimental version of the core for Consolidated Edison's nuclear power reactor has just run through its first series of tests. Tests were carried out by Babcock & Wilcox at its Critical Experiment Laboratory near Lynchburg, Va.

One of the significant features of the reactor: it represents the first use of large quantities of thorium in connection with a nuclear power plant project. BW, which is building the reactor for the plant the utility is building at Indian Point, N. Y., intends to study such reactor cores intensively, "primarily to obtain the nuclear physics data required to complete the most efficient design and to determine the operating characteristics of the full-scale plant."

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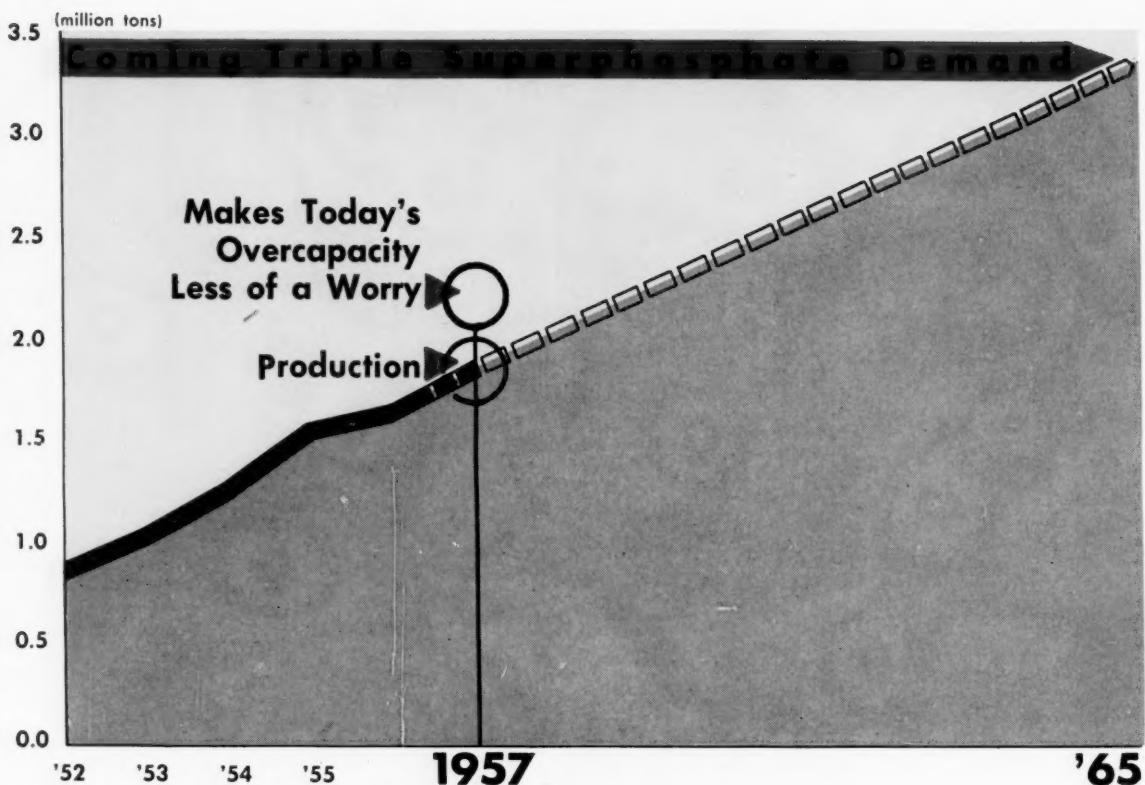
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MARKETS



'Triple' Traces a Steady Climb

Output of triple superphosphate* has more than doubled during the past five years. It reached nearly 1.7 million tons in '56 and will likely climb to more than 3 million tons/year by '65. U.S. production capacity for this plant food—conservatively estimated at about 2.2 million tons/year—is in excess of probable '57 output by 350,000 tons or more.

The current capacity excess doesn't worry producers, since many have been expanding existing production facilities in anticipation of steadily increasing demands.

Coming onstream right now is American Cyanamid's new 200,000-tons/year plant at Brewster, Fla. The startup will stretch over a period of several weeks because all individual units of the multistage process cannot be put into operation simultaneously. The entire installation, however, should be fully operating sometime early in May.

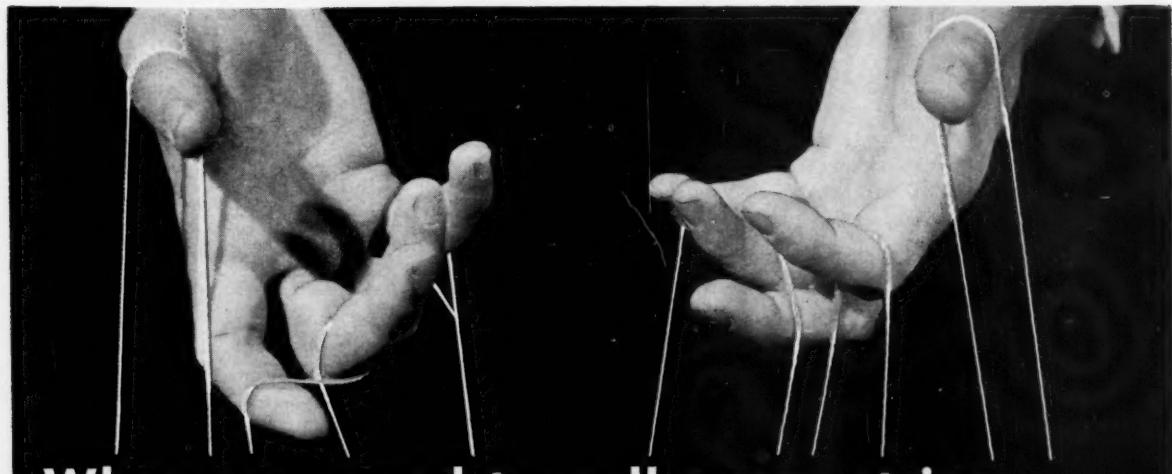
*Triple superphosphate—also called concentrated superphosphate—contains 45-48% P_2O_5 ; normal superphosphate contains 18-20% P_2O_5 . The U.S. Dept. of Commerce reports agricultural phosphates in three categories: "normal" grades, with up to 22% available phosphoric acid; "enriched," all grades with more than 22% and less than 40% available phosphoric; and "concentrated," all grades containing 40% or more available phosphoric. Production figures used by the industry are not directly comparable to government data, which is reported in terms of 100% available phosphoric acid instead of 45% P_2O_5 .

And International Minerals & Chemical confirms that when its new acid plant at Bonnie, Fla., goes on-stream this month, the firm's triple superphosphate capacity will be close to 350,000 tons/year.

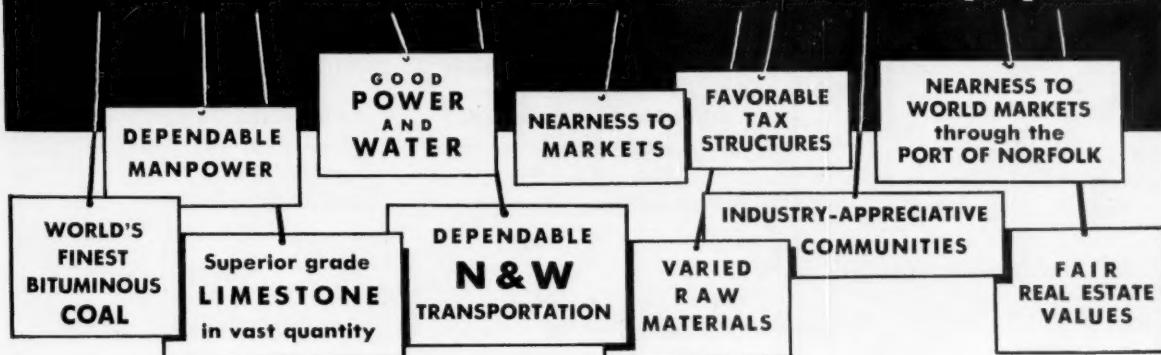
Incidentally, current expansions and upcoming new facilities in Florida will further entrench that state as the nation's top source of triple superphosphate. Combined capacities of all Florida producers of triple will exceed 1.7 million tons/year, about 80% of U.S. capacity.

Who's Who in Triple? Accurate estimates of total U.S. triple superphosphate capacity are difficult to pin down; they vary considerably with the individual market researcher's preferences in deciding what plants and capacity ratings should be included.

For example, some market observers credit Western Phosphate's Garfield, Utah, plant with a 175,000 tons/year triple superphosphate capacity. But spokesmen for the firm (partly owned by Stauffer Chemical) point out that this figure represents the combined capacities of triple superphosphate, ammoniated superphosphate, phosphoric acid and dicalcium phosphate. Because actual production of each may vary



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MARKETS

How U.S. Triple Superphosphate Capacity Is Distributed



MOBY DICK

45 NW

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Cloud	44 - 46°F
Pour	39 - 42°F
Iodine	80 - 90
Unsap. %	30 - 40
Saponification	132 - 140
FFA	2% max.

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Producer	Location	Estimated Capacity (tons/year)
American Cyanamid	Brewster, Fla.	200,000
Anaconda Copper	Anaconda, Mont.	100,000
Armour Fertilizer Works	Bartow, Fla.	175,000
Davison Chemical	Singlo, Tenn.	15,000
F. S. Royster Guano	Ridgewood, Fla.	240,000
International Minerals & Chemical	Mulberry, Fla.	70,000
I. P. Thomas & Son (division of Pennsalt)	Bonnie, Fla.	350,000
J. R. Simplot	Paulsboro, N.J.	20,000
Phillips Chemical	Pocatello, Idaho	90,000
Swift & Co.	Houston, Tex.	100,000
Tennessee Valley Authority	Bartow, Fla.	80,000
U.S. Phosphoric Products (division of Tenn. Corp.)	Wilson Dam, Ala.	40,000
Virginia-Carolina Chemical	Tampa, Fla.	550,000
Western Phosphates	Charleston, S.C.	30,000
	Nichols, Fla.	100,000
	Garfield, Utah	75,000
	Total	2,235,000

from time to time (depending on consumer demand), the company itself is reluctant to set a capacity figure for any one product.

Perhaps the most realistic "unofficial" estimate extant, for the triple alone, is 75,000 tons/year. It's possible that more could be made, of course, but how much more is anyone's guess.

Proper capacity rating on the Tennessee Valley Authority's Wilson Dam, Ala., plant is also a matter for conjecture. A few years ago, TVA produced approximately 160,000 tons of triple annually, but output last year was down to 41,200 tons (*CW, Jan. 19, p. 82*). This reduction was in accordance with the authority's plan to gradually convert the triple superphosphate unit to the manufacture of other products.

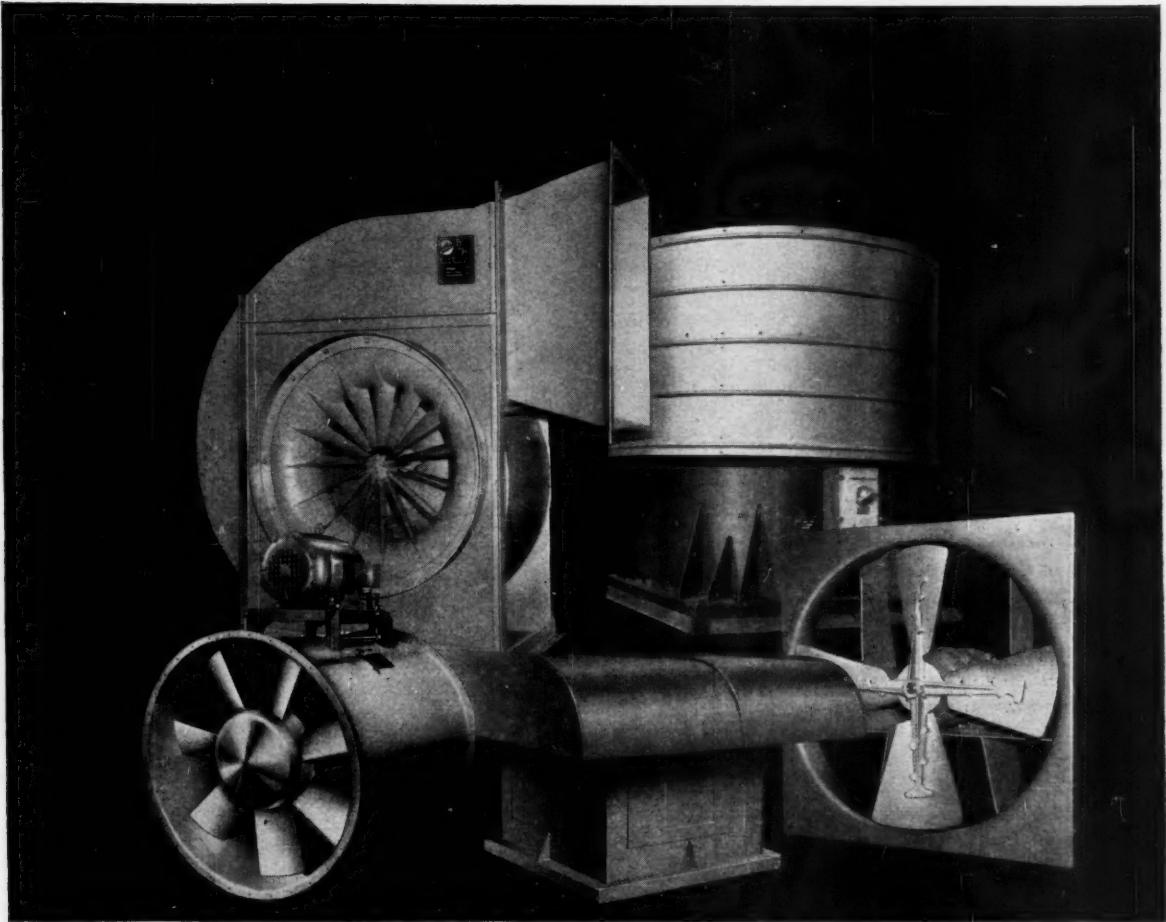
Some trade followers still list TVA's triple superphosphate capacity at 140,000 tons/year. But, because TVA probably will not again make such large amounts of the material, a more realistic rating would be one commensurate with annual production—in which case, current capacity could be listed as not exceeding 40,000

tons/year, and perhaps be considerably lower.

It's a matter of opinion, too, whether or not a plant should be listed at its original rated capacity even if it consistently turns out more than the capacity-rated amount of product. A case in point: Davison Chemical's big Florida continuous-process installation. The firm has officially stated that the plant capacity is 200,000 tons/year, but officials are now inclined to talk about 240,000 tons, since this figure more nearly corresponds to actual production achievements.

Perhaps more important is trade speculation concerning the possibility that Phillips Chemical has permanently shut down its plant at Houston, Tex., because of production difficulties. The company maintains, though, that the plant "makes a good grade of triple superphosphate and is shut down now to reduce inventory." By implication, the shutdown is temporary, and the plant should still be considered a part of the nation's total available triple superphosphate capacity.

Puzzling is the fact that some mar-



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backward curve or forward curve fans to match your requirements exactly. "Buffalo" Propeller Fans are built in 8" to 144" sizes to deliver up to 250,000 cfm — also available as package roof ventilators in many sizes. You can order rubber-lined exhausters, stainless steel fans, high-temperature fans, low-temperature fans, non-sparking and many others.

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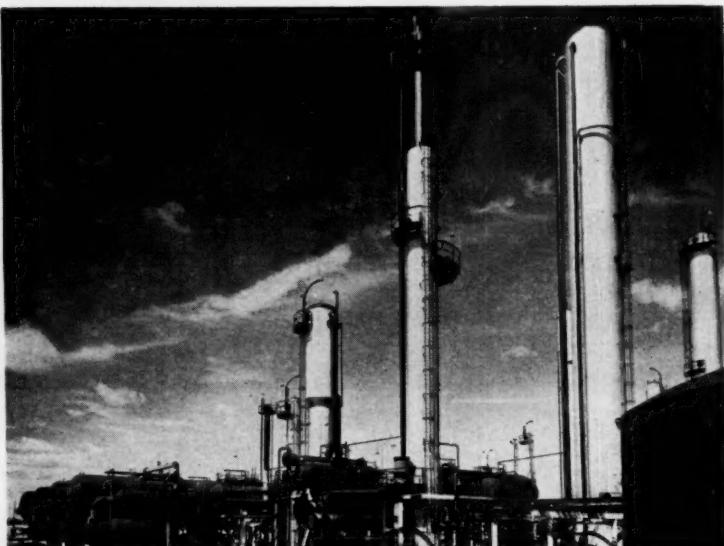
ket researchers still credit Jefferson Lake Sulfur with triple superphosphate production at Wendell and Montpelier, Idaho. The company started to build a plant at Montpelier about three years ago, but changed plans because "our market studies indicated that there was already enough capacity to meet the demand." Too, the reported purchase of the Gates Brothers plant at Wendell, by Jefferson Lake Sulfur, did not materialize; the plant has, in fact, been scrapped.

Nutrient Step-up: One major factor favoring continued increases in demand for triple superphosphate is the

steady trend toward use of fertilizers with high nutrient contents. In 1900, the average plant food content of all mixed fertilizers supplied in the U.S. was 13.9%; by 1952, this was increased to 22.5%, by '55 to 28.9%, and it's now climbing to the 29-30% range.

And because nitrogen cannot be used effectively without phosphates and potash, these materials, too, must be added directly to the soil to provide a proper balance of plant nutrients.

Bigger Share for Triple: The upshot is that triple superphosphate use is growing faster, proportionally, than



Butadiene on a Spree

For butadiene, '57 may well be the year of plenty—the year total U.S. capacity touches the millions/tons/year mark. Underscoring the commodity's growth are these late-breaking developments:

- This week, Texas Butadiene & Chemical's second Houdry Dehydrogenation butadiene unit (see above) goes into full production at its plant near Channelview, Tex. The expansion boosts the company's capacity to about 61,000 tons/year of butadiene and approximately 2.5 million bbls. of aviation-grade alkylate, or, if need be, 86,000 tons/year of butadiene alone.

- Late this month, Firestone Tire & Rubber's \$10-million, 40,000 tons/year butadiene plant at Or-

ange, Tex., will be ready to go.

About ready, too, are Petro-Tex Chemical's 45,000-tons/year butadiene venture at Houston, Tex., and Phillips Chemical's Borger, Tex., plant, which is slated to turn out an additional 25,000 tons/year. Later on, probably in the third quarter, Odessa Butadiene Co.'s Houdry Dehydrogenation unit will tack on 50,000 tons/year.

Neches Butane Products (the Tex-as-U.S. Chemical and Goodrich-Gulf combination) will expand its present nearly 200,000-ton capacity to about 300,000; due date is early next year. These, and other butadiene expansion plans still in the works, should lift the country's capability to well over a million tons/year in '58.

BETTER DISTRIBUTION METHODS.....



11:00 A.M. EST: Merchants' New York office receives local phone call from troubled purchasing agent. Can you help us? Our Chicago plant needs 5 drums trichlorethylene immediately.



11:06 A.M. EST: Message goes out by teletype to Merchants' Chicago office, where rush order and delivery instructions are relayed to adjoining warehouse.



10:20 A.M. CST: Five drums of trichlorethylene are loaded on small delivery truck.



10:45 A.M. CST: Shipment arrives at customer's plant, less than an hour after initial call.

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In the instance outlined here, Merchants actually beat the clock in an effort to get material to a customer when and where he needed it. Close cooperation and an efficient communication system among the nationwide Merchants' offices made it possible. Wherever you locate, Merchants can serve you.

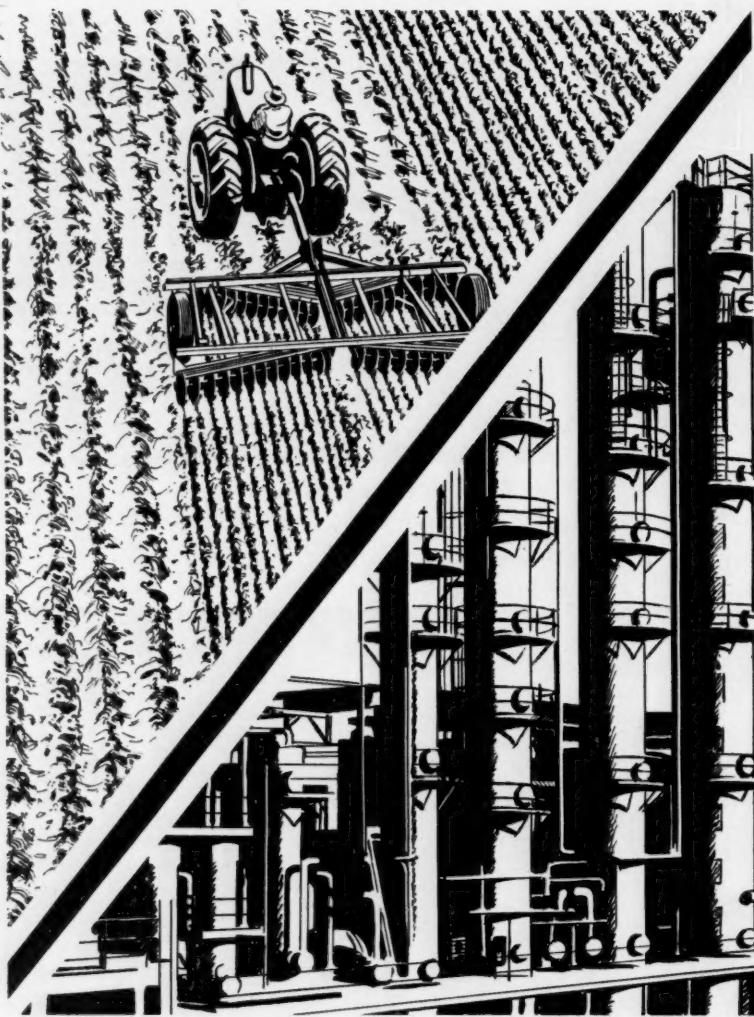


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MARKETS

the total consumption of all types of fertilizer phosphates. Ten years ago, normal superphosphate provided nearly 90% of the phosphorus plant foods (as P_2O_5) in fertilizers; it now accounts for only a little more than 60%.

Meanwhile, the proportion of phosphorus nutrient provided by triple superphosphate has grown from less than 10% to over 30%.

This does not mean, however, that triple superphosphate has a clear road to a position of primary importance. On the contrary, the fertilizer business is still dominated by normal superphosphate; too, other phosphatic materials (e.g., ammonium phosphates), which were of negligible importance a decade ago, now contribute nearly 10% to total fertilizer phosphates consumption.

Early this year, the Commerce Dept.'s Business & Defense Services Administration noted that some manufacturers of triple superphosphate "were disappointed that 1956 demand for the product was not higher." Several producers of triple—as well as other companies—have indicated plans for initiating or increasing the manufacture of ammonium phosphates of other nitrogenous-phosphatic types.

But if producers of triple superphosphate are not elated about last year's sales, they have more reason for optimism than many others. Total production of phosphatic fertilizer materials varied only slightly from that of '55; small declines in output of normal and enriched superphosphates were offset by increased production of triple superphosphate.

The fertilizer industry as a whole, though, has something to think about—last year, fertilizer consumption in the U.S. and its territories declined about 2.8%, and the consumption of plant nutrients, despite the trend toward increased concentrations, declined 0.6%.

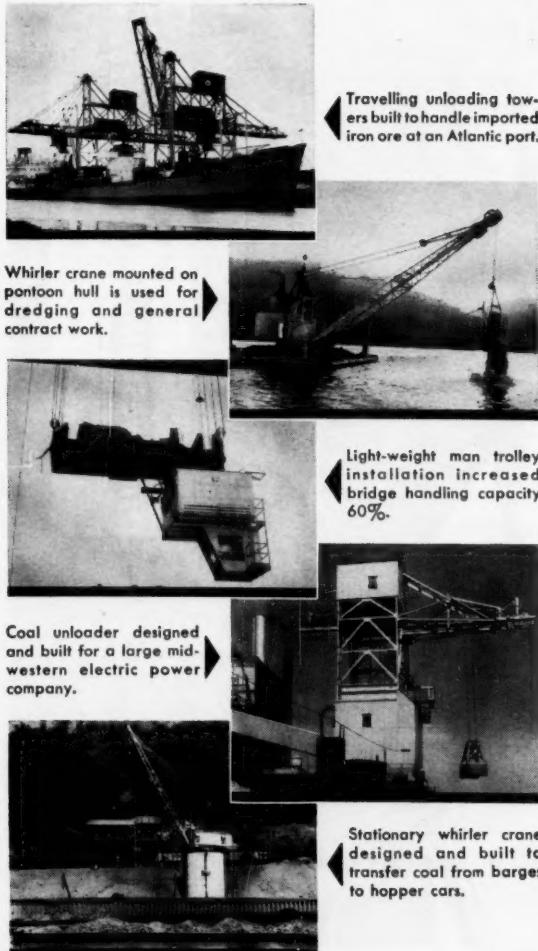
If total U.S. consumption of fertilizer has now reached a plateau, it can only mean that producers of competing phosphatic materials can depend less on over-all increases in fertilizer demand to expand sales; they'll have to intensify competition for existing markets. And there's ample reason to believe that triple superphosphate will have a better than even chance to hold its own in the forthcoming jousts for markets.



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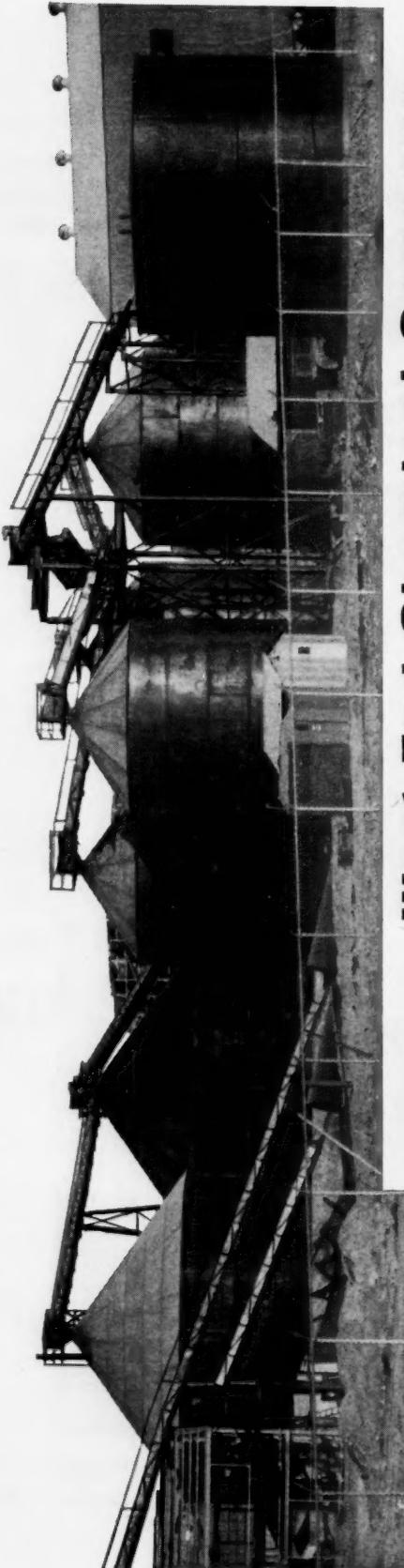
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Market Newsletter

CHEMICAL WEEK
May 4, 1957

Price-changing activity has been noticeably slack again this past week. But that's understandable—May is the midpoint of the quarter. Of concern to chemical consumers, though, is the thought that the current lull may presage a resumption of the price index advance that began last fall.

Chances are, however, that fears of another round of general price-hiking—in the immediate future, at least—are unfounded. Underscoring this point of view: a recent survey (by Dun & Bradstreet) of what businessmen expect for the third quarter of '57, indicates that while 32% of those interviewed expect selling prices to be higher, compared with the same period last year, about 65% expect no change. How many see a drop? Only 45 of the more than 1,450 businessmen queried.

Prices of most major coal chemicals appear well-pegged, despite a definite easing in tempo of business. Take a look at toluene, phthalic anhydride, benzene and xylene.

A few months ago, benzene sellers were hard pressed to keep up with demand, but the pressure is off now.

Worrisome inventory buildups are a long way off, though. Some producers, in fact, are certain that such a situation won't hit the industry at all this year. Why? Two reasons: (1) benzol imports have dropped significantly in the past few months; some expect the '57 total of such incoming shipments to fall a good 20% short of last year's record 66 million gal.; (2) coke-oven output is down about 8% since early this year because of a decline in steel production, and this should contribute to a firmer benzol supply.

Volume of trade in phthalic is fairly good, but not up to marketers' earlier expectations. Supplies are generally more than ample to satisfy all demands. No one really expects a hefty surge in buying to materialize, but just in the last few days there have been healthy signs of improvement.

Producers are more than optimistic about the material's outlook for the near future. Phthalic price will remain steady, even though additional material is hitting the market.

Formaldehyde demand is being sustained by steady production of phenolic, urea and melamine resins, its three top outlets. But consumers need have no worries about supply. Just this month, Borden "formally activated" its new 36-million-lbs./year plant at Fayetteville, N. C., and Reichhold Chemicals began production at its new Tacoma, Wash., installation.

The Fayetteville opening is Borden's second formaldehyde startup this year—its Kent, Wash., plant went onstream a couple of months

Market Newsletter

(Continued)

ago (*CW Market Newsletter*, Feb. 23). Reichhold's Tacoma plant has a 20-million-lbs./year capacity, but this will be expanded by the end of the year to "take over production of the nearby Seattle plant, which has a capacity of 30 million lbs." Equipment in the Seattle unit will be moved to Tacoma.

Urea users in the West now have a source of supply. Distribution to growers in Pacific Coast agricultural areas has started from Shell Chemical's new urea unit at Ventura, Calif. The installation is adjacent to Shell's Ventura ammonia plant, source of the urea's raw materials. Although Shell isn't saying how much urea will be made, when the story first broke that the firm would produce urea on the Coast (*CW Market Newsletter*, July 16, '55), a capacity figure of 150 tons/day was bruited about.

What's the latest on certificates for glycerine expansions? Decision may come this week on whether established producers Shell and Dow or potential newcomers Olin Mathieson and Union Carbide (*CW Business Newsletter*, April 6) get fast tax write-offs from the government. The Business & Defense Services Administration (which makes the recommendations) and the Office of Defense Mobilization (which must make the decision) will huddle on the long-deferred issue.

The agencies will try to work out an agreement on how to apply a Justice Dept. opinion that competition would be better served by granting certificates to companies that are not now producers of synthetic glycerine. BDSA, reportedly, would like to base its recommendation on more traditional defense factors (location, etc.), but leave it up to ODM to apply the "antitrust" opinion as an additional criterion.

The glycerine expansion approvals have been held up some time by such problems (*CW*, Sept. 15, '56, p. 80), but officials hope to hurdle the block in fairly short order. It's pretty certain that the Justice Dept. opinion will get some consideration in the final decision. Question now is: How will it be applied—and by whom?

SELECTED PRICE CHANGES — WEEK ENDING APRIL 29, 1957

DOWN

	Change	New Price
Candelilla wax, crude, bgs.	\$0.02	\$0.64
Candelilla wax, refd., bgs.	0.02	0.69
Tankage, Chicago, animal, feeding, 9-11% ammonia, bulk, per unit ton	0.25	6.00
Tung oil, dms., c.l., New York	0.0025	0.235

All prices per pound unless quantity is stated.

Another example of



CHEMICAL
PROGRESS

Tank car being sprayed by Lithcote Corp. with coating based on special phenolic resin developed by General Electric. Unusual chemical resistance of coating gives tank cars "two way" versatility—enables them to haul acid one way, make return trip with hot caustic.



General Electric Resin Chemistry

GIVES TANK CARS A "TWO WAY STRETCH"

Corrosion that never touches a chemical tank car can still severely limit its usefulness—in this way: A car delivering acid may have to stand idle or be returned empty if its protective lining isn't impervious to attack by other corrosive chemicals.

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severe operating conditions, G-E Methylon formulations have far outlasted standard coating materials.

Resin chemistry is an important part of General Electric research, for G.E. makes a wide range of resins for industry. For further information on Methylon resins, write Dept. CMD, CHEMICAL and METALLURGICAL DIVISION, General Electric Company, Pittsfield, Mass.

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Miami.....	Biscayne Chemical Labs, Inc.	
Orlando.....	Lenfestey Supply Company	
Tampa.....	Lenfestey Supply Company	
GEORGIA		
Atlanta.....	Chemical Services, Inc.	
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Chicago.....	Phillips & Martin Co.	
INDIANA		
Ft. Wayne.....	Hoosier Solvents & Chemicals Corp.	
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Buffalo.....	Chemical Sales Corp.	
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Rensselaer.....	Eastern Chemicals, Inc.	
Rochester.....	Chemical Sales Corp.	
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Durham.....	Cardinal Products, Inc.	
OHIO		
Cincinnati.....	Amso Solvents & Chemicals Co.	
Cleveland.....	Ohio Solvents & Chemicals Co.	
Toledo.....	Toledo Solvents & Chemicals Co.	
OKLAHOMA		
Tulsa.....	Ward & Kimball Chemical Co., Inc.	
OREGON		
Portland.....	Van Waters & Rogers, Inc.	
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Dallas.....	Texas Solvents & Chemicals Co.	
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KENTUCKY
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MASSACHUSETTS
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Worcester Chemical Sales & Service Co., Inc.

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DEPARTMENT

ADMINISTRATION

CHEMICALS vs. OILS AS INVESTMENT

Marketability of common stocks as source of new venture capital

At present, chemical stocks are relatively higher priced...

Average price/earnings ratios, Jan. 1, '57

30 leading chemical stocks: 17.80 to 1

20 leading oil stocks: 13.65 to 1

...reflecting confidence in continued growth prospects over the 'long haul'...

Average compound interest rate of return on a \$1,000 investment, 1936-57

20 leading chemical stocks: 11.52%

20 leading oil stocks: 11.15%

...but in recent years, oil stocks have been more lucrative.

Average compound interest rate of return on a \$1,000 investment, 1950-57

30 leading chemical stocks: 17.98%

20 leading oil stocks: 22.90%

'Patient Money' Pays Off in Chemicals

Prestige of chemical stocks—relative to oils and other "blue chips"—will be in for a test late this month if the directors of American Cyanamid, at their May 21 meeting, approve the one-for-one stock dividend recommended by the firm's president, Kenneth Towe.

If that dividend issue becomes reality and the price of Cyanamid common shares settles at not much less than \$40, it will mean that the price-earnings ratio will hold at about 18.5 to 1. And, if Cyanamid's dividend payments continue at last year's level, the current rate of return will stay close to 3.5%.

These figures illustrate what has

been happening to chemical stocks: prices have been rising, reflecting strong demand—investors have been stirred by chemical securities' reputation as "growth stocks" that are relatively "depressionproof." Result: chemical stocks seem to be overpriced. Price-earnings ratios are high (*see table, above*), and dividend rates are conservative (1956 average for 20 leading chemicals, 2.93%).

'Birds of a Feather' Theory: There's added significance in this situation as a result of the investing public's tendency to view individual chemical stocks in terms of chemical industry averages. For example, a prospective purchaser of Cyanamid common would

be likely to discount its current rate of return (3.4%) and rely instead on the group average (2.9%) as an indication of future short-term yields.

This effect explains why any large chemical company's new equity issues—such as the stock dividend being contemplated by Cyanamid—is important to the entire industry.

High prices, of course, are crimping the attractiveness of chemical stocks as short-term investments. But over longer periods—in which there's time for increase in market value to come into play alongside dividend payments—chemical stocks rank high.

During the past 21 years, leading chemical stocks narrowly outperform-



Four important advantages of new polyethylene packaging for PFIZER antibiotics



The package consists of two polyethylene bags, one inside the other. The inside bag and the interior surface of the outer bag are completely sterile.

The use of film made of BAKELITE Brand Polyethylene, recently adopted by Chas. Pfizer & Co., Inc., Brooklyn, N. Y., for bulk packaging of sterile antibiotics, has resulted in four major benefits:

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2. Elimination of shatterable containers.
3. Less storage—new packaging occupies $\frac{1}{6}$ the space formerly required.
4. Less freight—customers save as much as 75% in charges.

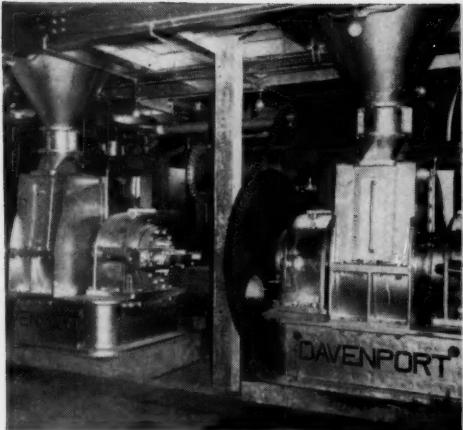
The strength and chemical inertness of film made of BAKELITE Polyethylene provide similar benefits for packaging a wide range of chemicals and corrosives. Ask your packaging supplier to show you various forms of polyethylene packaging. Or write Dept. XB-34.

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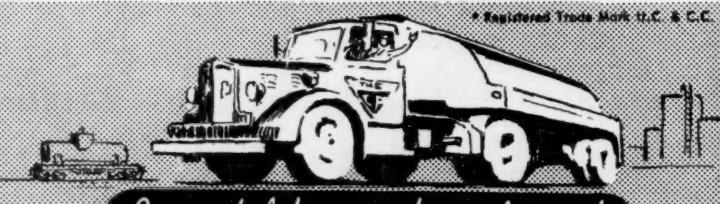
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ADMINISTRATION

ed—on a compound-interest basis—major petroleum stocks, which have allegedly been benefiting from tax advantages. If the comparison is limited to the past seven years, oil stocks have a definite edge, although the chemical stocks still rank decidedly higher than most industrial securities.

This background of rapid appreciation in investment principal, combined with confidence that this history will repeat itself, is the big factor behind present price tags on chemical stocks.

50¢ Worth of Risk: This situation has prevailed basically unchanged since 1952, when it was noted that \$1 invested in petroleum would bring an equity in 90¢ worth of assets; the corresponding equity for an "average chemical" investment was only about 40¢/\$1 (*CW*, April 11, '53, p. 18). Greater anticipation of speculative gain in chemicals accounts for the difference.

Up-to-date readings on the status of leading chemical stocks can be obtained by comparing the post-Korea performances of these securities with those of principal oil companies' stocks—which qualify as "blue chip" by almost any standards. For such a comparison, a convenient starting point is Stanford Research Institute's "Chemical Economics Handbook," containing investment data sheets for most of the large chemical and petroleum companies whose stocks are listed on the major stock exchanges.

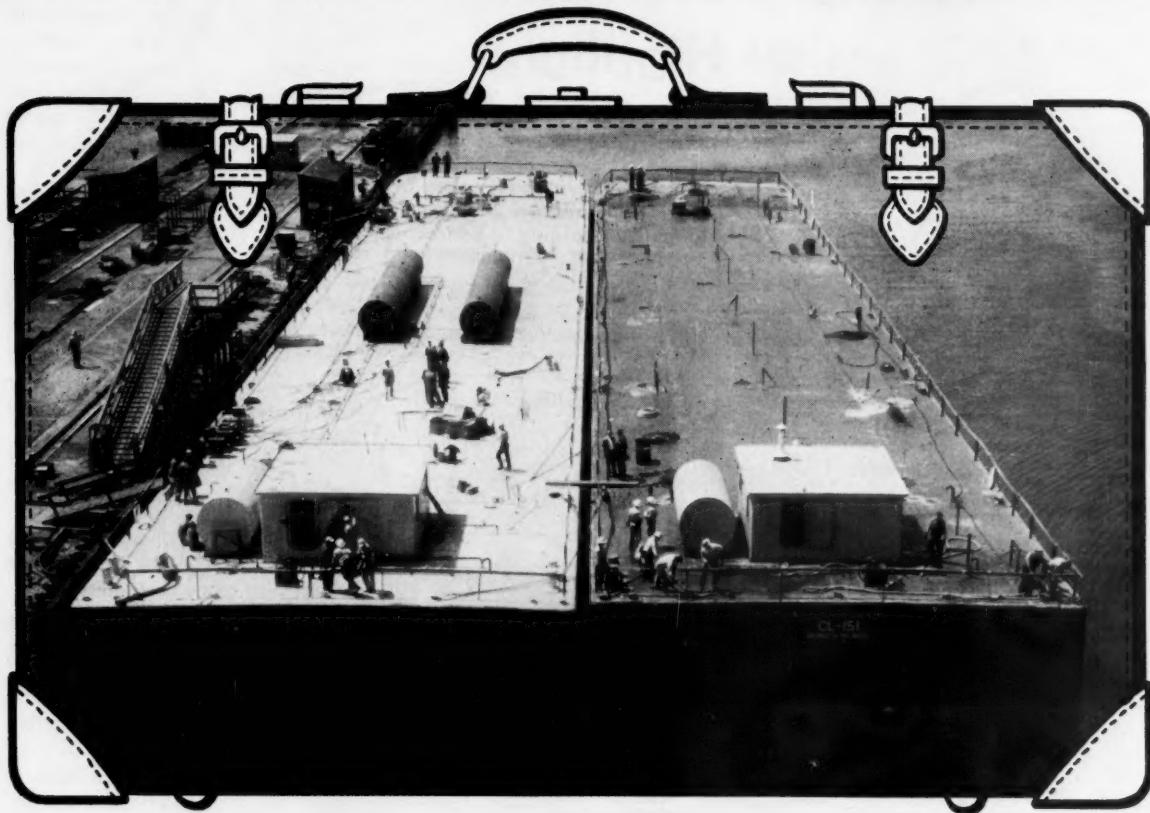
Adding 1956 dividends, stock splits and closing prices to SRI's data sheets brings out the latest trends: higher dividend payments on both chemical and petroleum stock shares, but increasing investor's resistance to higher prices on chemical stocks.

Dividends Still Rising: The trend toward higher dividends continues. Payments during the first quarter of this year included \$211.7 million by makers of chemicals and allied products and \$330.6 million by oil-refining companies—increases of 7.4% and 8.7%, respectively, over the corresponding figures for 1956.

The trend toward a leveling-off in market prices of chemical stocks—and even declines in a number of individual issues over the past year—would appear to reflect recognition by the investing public that chemical company growth entails considerable outlays for research and development.

Case in point: the address by Rich-

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Hooker's Growth Is Chemical Highlight

Record of \$1,000 investment in common stock of Hooker Electrochemical Co. from Dec. 31, 1935, to Jan. 1, 1957

Year	Operating Highlights	Investment Highlights	Dividends Paid on Holding	Value of Shares at Year-End
1935		25.64 shares bought at \$39.	—	\$1,000
'36				
'37	Company resumed payment of common stock dividends after six-year lapse during depression.		\$205.12	2,064 2,218
'38				
'39		Stock price rising; ended year at \$93.	128.20 102.56	2,128 2,385
'40		Stock split 10 for 1; year-end closing price: \$17.50.	179.48	4,487
'41				
'42				
'43				
'44				
'45				
'46	With Detrex Corp., company formed Hooker-Detrex joint subsidiary.	Stock price rising; ended year at \$58.75.	333.32 410.24 410.24 410.24 410.24 512.80	5,641 6,410 7,661 7,948 12,243 15,064
'47		Stock split 2 for 1; year-end close: \$36.	564.08	18,461
'48				
'49				
'50				
'51				
'52	Formed Canadian subsidiary.	Stock price rising; closed at \$64.50.	615.36 615.36 1,025.60 1,025.60 1,025.60	14,871 16,922 22,563 30,255 33,076
'53				
'54		Stock split 3 for 1; close at year-end: \$30.875.	1,025.60 1,692.24	29,358 47,506
'55	Merged Durez Plastics & Chemicals, Niagara Alkali Co.		1,461.48	62,305
'56	Merged Oldbury Electro-Chemical Co.	Holding 1,538.4 shares; year-end close: \$38.	1,538.40	58,459
Value of holding at end of period				
Total dividends on holding				
Value of shares plus total dividends				
21-year appreciation equivalent to compound interest rate of 22.6%				

ard Schneider, vice-president of Empire Trust Co., at last winter's New York meeting of the Manufacturing Chemists' Assn. Schneider estimates that "substantially increased expenditures for research" by chemical companies should bear fruit in expanded sales and profits—but possibly not until 1960 or later.

Meanwhile, the long-range profitability of leading chemical stocks continues to be a cardinal article of faith in the financial world. In noting that 15 highly regarded chemical stocks together chalked up an appreciation of 1,564% since they've been traded on the New York Stock Exchange (none earlier than 1920), a publication of that exchange says:

"From a performance record, it would probably be difficult, if not impossible, to come up with 15 common stocks in any other industrial classification that have treated their stockholders more handsomely."

Outstanding case history on the SRI data sheets, which show earnings and appreciation on hypothetical \$1,000 investments made Dec. 31, 1935, is common stock of Hooker Electrochemical (see table, left).

Thus, chemical stocks have become "typed" as good investments for future income and long-term appreciation, but only so-so for current income. Would it be to the industry's advantage to alter this reputation?

Few chemical companies are planning to use common stock to raise new capital this year (*CW*, March 30, p. 16); so this is not an immediate factor for management in determining dividend and stock policy. More pressing considerations: stock performance as a criterion of managerial effectiveness in serving the stockholders, and stock price as the basis for mergers and acquisitions.

These considerations seem to call, first, for managerial policies that will sustain and bolster the stock's market value. Then taking into account a chemical company's special requirements for relatively large annual investments in research and in plant construction and modernization, the industry's comparatively conservative policy on dividends appears to be amply justified. As Schneider expresses it, the chemical companies have a continuing need for "patient money."



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ADMINISTRATION

Antipollution Aids

With process companies in the vanguard, three separate moves against water pollution were reported from New York state: a joint industry-community agreement to clean up the Buffalo River, a single firm's attempts at pollution control, and the state's decision to draw up a state-wide pollution abatement plan.

The industry-community agreement calls for the city of Buffalo to build a \$7-million pump plant that will be leased to a corporation to be organized by National Aniline and General Chemical divisions of Allied Chemical & Dye Corp., Donner-Hanna Coke Corp., Republic Steel Corp. and Socony Mobil Co. The plant will pump fresh water from Lake Erie to be used for cooling purposes by plants of the participating firms, and then empty the water into the Buffalo River.

Donner-Hanna has also put into operation a \$150,000 treatment plant, which is expected to remove 98% of the phenol normally emptied into the Buffalo River as industrial waste from the firm's coke-producing operations.

In a third blow at pollution, New York's water pollution control board announced intentions to survey Lake Ontario water between the Niagara and Oswego Rivers for classification purposes—the first step toward a state-wide pollution abatement plan.

LEGAL

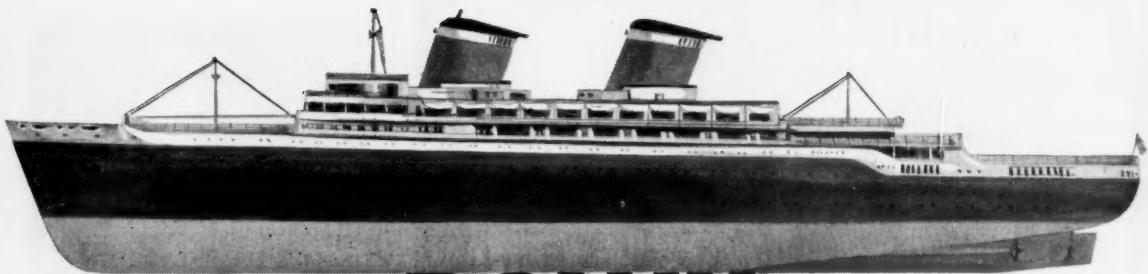
Pollution in Idaho: Food Machinery and Chemical Corp. and J. R. Simplot—a Nevada fertilizer manufacturer—have been named defendants in damage suits totaling \$500,000. The suits charge the companies with damaging crops and livestock by air and ground pollution.

A total of nine suits were filed in federal court at Boise, Idaho, charging that the defendants' plants located seven miles west of Pocatello discharged deposits of a poisonous nature in addition to fumes and vapors.

The largest single suit was brought by Clarence Garrett and his wife (Bannock County) asking \$80,000 compensation from each firm, plus \$20,000 punitive damage.

•
Bufferin Injunction: New York department store R. H. Macy & Co. has been enjoined by Federal Judge

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for a special lining that would not only ship their hard-to-hold product but one that would also permit lithographing of the container. Inland's lining experts solved this two-fold problem with a tailor-made lining applied to an attractively lithographed pail.

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JUDGE MURPHY: His injunction cites Macy for Bufferin infringement.

Thomas Murphy from using the name Bufferin in connection with the sale of any product other than the Bristol-Myers Co. product Bufferin.

In seeking the injunction, Bristol-Myers charged that Macy engaged in a "deliberate effort to appropriate through deception and misrepresentation the goodwill attached to Bristol-Myers' trademark . . . and to destroy that trademark by misusing it as a generic, or descriptive term."

Judge Murphy said Macy, in "falsely representing that its product was Bufferin and made by the maker of Bufferin," infringed the plaintiff's trademark. Such conduct, he said, "amounts to unfair competition."

Koppers Infringement Suit: Koppers Co. and Wheeling Steel Corp. were cleared by the U.S. district court at Wheeling, W. Va., of charges of infringing patents belonging to Carl Otto, president of Otto Construction Co. (New York). The patents deal with the apparatus and method of production of ammonium sulfate as a by-product of coke-oven gas by means of a "spray"-type saturator and also by means of a "flare mouth"-type dip pipe saturator.

The apparatus in question was built and operated at the Wheeling Corp.'s Follansbee plant in West Virginia.

The court held that the patents (2,599,067 and 2,423,794) were invalid for lack of invention and were not infringed.

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ADMINISTRATION

IDEAS

Advancement Opportunities: Diamond Alkali has launched an intensive 18-month "engineering experience-technical training" program designed to broaden the advancement opportunities of newly employed chemical engineering graduates.

Basic purposes of the program: to broaden work experience background, facilitate intelligent selection of area or type of work, assist management in selection of employees, strengthen and improve the company's recruiting efforts, introduce junior engineers to management problems, and to stimulate ingenuity and inventiveness.

Each employee assigned to the program will work for six months each in three different research and development groups at the firm's research center. After 18 months, the junior engineer is either permanently assigned to a participating group with which he has previously spent some time or he may continue in the program with assignment to a fourth group.

Highlighting Engineers: Chemstrand Corp. (Decatur, Ala.) has presented to University of Florida an educational display highlighting roles of engineers in the chemical fiber industry.

The permanent display—to be located in the university's engineering and industries building—uses flow diagrams and photographs to illustrate the manufacture of Chemstrand's two major products, Acrilan acrylic fiber and nylon, and describes the roles engineers play in such operations.

LABOR

More Regulation Coming: Disclosures in the Senate committee hearings on alleged corruption in labor unions appear to have set the stage for new legislation regulating labor-management relations. Latest proposal: a bill by Rep. Peter Frelinghuysen (R., N.J.) intended to make it harder for racketeers to siphon money out of employee welfare and benefit funds. This bill would authorize U.S. district attorneys to act on complaints by union members about suspected fraud or embezzlement. Frelinghuysen's suggestion follows the controversial bill introduced earlier by Sen. Paul Douglas (D., Ill.), calling for public disclosure and registration of all em-



FRELINGHUYSEN: He favors U.S. protection for employee welfare funds.

ployee welfare programs. The Douglas bill is under attack from the National Assn. of Manufacturers, which favors registration only for programs administered jointly by union and management—not for plans administered solely by companies.

Regulatory measures also are being enacted on the local level. Five cities in Kentucky, for example, have recently adopted ordinances that restrict picketing and require union organizers to pay license fees.

How Loyal Are Employees? Also in Kentucky, a labor relations consultant is advising management not to overestimate employees' attachment to their labor unions. That worker-union bond, says William Gutwein, ranks below these four higher loyalties: to the employee's family, to his community and nation, to his interests as a consumer, and to his employer.

Automation and Labor: Though knowledgeable predictions—such as the ones outlined last week by W. C. Allen, director of manufacturing planning for Westinghouse Electric Corp.—are that increasingly automated plants will be needed to meet the rising needs of an expanding population while a labor shortage is developing, some labor unions are concerned about more immediate effects of automation. Noteworthy are the terms of the new contract ending the recent 15-day strike by United Rubber

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ADMINISTRATION

Workers (AFL-CIO) against B. F. Goodrich Co. The union asserts that the new agreement will prevent the cutting of employees' normal earnings by technological improvements that automatically speed up machine operations.

KEY CHANGES

David M. Kennedy, to director; and Robert V. Jaros, to treasurer; Abbott Laboratories (North Chicago, Ill.).

Carl F. Graham, to director of research and development, Turco Products, industrial chemical processing compounds maker (Los Angeles).

E. W. Carey, to vice-president, Fibreboard Paper Products Corp. (San Francisco).

Bruce S. Ainsworth, to manager, Chemical Division Application Laboratory, Research Laboratories (Summit, N.J.), Celanese Corp. of America.

Nathaniel Brewer, to vice-president in charge of technology, and chairman of the executive committee, Fischer & Porter Co., process instrumentation manufacturers (Hatboro, Pa.).

David R. Breien, to vice-president and controller; and M. J. Marchione, to treasurer; Lummus Co., industrial engineers and constructors (New York).

Norman E. Woonton, to vice-president, manufacturing, Cowles Chemical Co. (Cleveland).

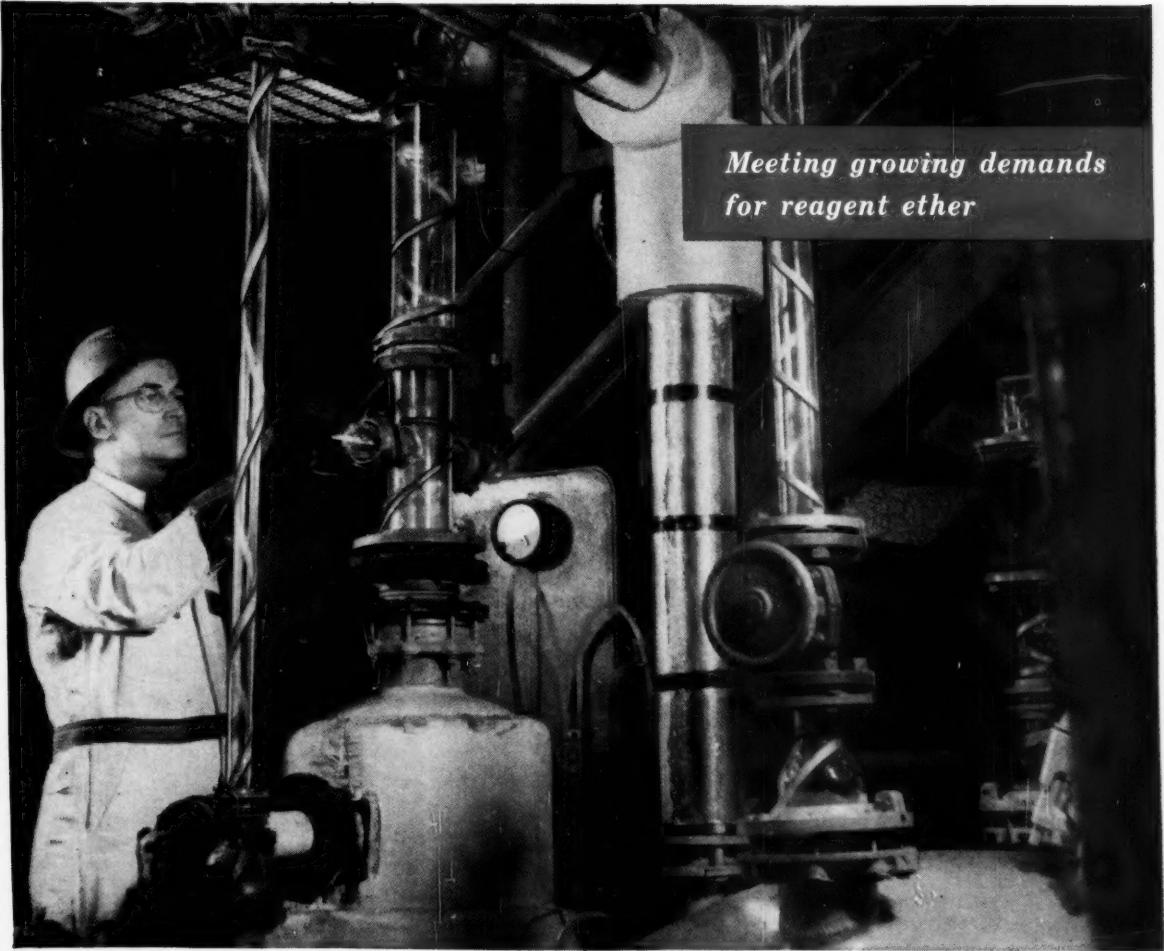
Milton Rex Wingard, to vice-president, technical director and director, Davidson-Kennedy Associates Co., chemical process plant and facilities designers and constructors (Atlanta).

RETIRED

Robert C. Palmer, vice-president and chemical director, Newport Industries Co., a division of Heyden Newport Chemical Corp.

CONSULTANTS

H. E. Bovay, Jr., Consulting Engineers, and Reg F. Taylor, Consulting Engineer, have merged the two firms, retaining the firm name Bovay, with headquarters in Houston, Tex. Taylor will serve as engineering consultant, and his staff will become a part of the Bovay staff.



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